# MANAGEMENT PLAN

March 2000

## for Churn Creek Protected Area

BRITISH COLUMBIA

**Ministry of Environment**
**Lands and Parks**
**BC Parks Division**

# Churn Creek Protected Area

# MANAGEMENT PLAN

Prepared by
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Cover photo by Chris Hamilton

# Churn Creek Protected Area

# Management Plan

Approved by:

Steve Mazur
District Manager
Date: March 10/00

Denis O'Gorman
Assistant Deputy Minister
Date: MAR. 16, 2000

Joan Sawicki
Minister
Date: Mar 31, 2000

**This Management Plan is a component of the Cariboo-Chilcotin Land-Use Plan (CCLUP) and was developed through direction from that land use plan.**

**This Management Plan has been endorsed by the Cariboo Chilcotin Regional Resources Board and the Cariboo Mid-Coast InteragencyManagement Committee as being**

**"Consistent with the spirit and intent of the CCLUP."**

**This Management Plan was developed with the input of a Local Advisory Group to address the grasslands conservation and restoration requirements of the nationally significant Churn Creek Protected Area. As with all Park and Protected Area Management Plans, the approaches and methods used in the plan are adapted to the unique nature of the Protected Area and will not necessarily be used in other Parks and Protected Areas that have domestic livestock grazing**.

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# ACKNOWLEDGMENTS

BC Parks would like to acknowledge the time and effort of the Churn Creek Local Advisory Group in the development of this Management Plan. We recognize most people donated a great deal of their personal time in order to help us in writing the document, and that sacrifice is acknowledged and greatly appreciated.

In addition to the Local Advisory Group, a number of individuals and organizations donated their special skills and knowledge. Kristi Iverson, a consulting ecologist, put in many unpaid volunteer hours at Churn Creek working on grassland issues. Ducks Unlimited also donated many dollars of free engineering time determining the state of the water storage systems and providing advice on how they could be fixed in innovative ways. Thanks also to Larry Ramstad of the Gang Ranch for providing valuable background information on ranching in the Churn Creek area. We would also like to thank Henry Koster for providing much of the history of the Empire Valley Ranch and for his many wonderful stories about ranch life at Churn Creek.

A number of government staff members also put a great deal of time and effort into the plan. We wish to acknowledge the efforts of Ministry of Forests staff who provided expertise and guidance on grasslands ecology and range management. Of particular value were the many hours Ordell Steen, Ray Coupe, Ross Fredell and Chris Armes spent in the field assessing the condition of the grasslands and the many more hours spent in the boardroom discussing those findings. Pat Dielman, Julie Steciw and John Youds from the Wildlife Branch also provided valuable information on wildlife in the Churn Creek area. Herb Carter and Glen Davidson from BC Parks were also instrumental in developing the plan.

Chris Hamilton
BC Parks, Cariboo District
Senior Park Planner

# PLAN HIGHLIGHTS

## Cariboo Chilcotin Land Use Plan Commitments

- ✓ This Management Plan for the Churn Creek Protected Area was developed with the direct involvement of a Local Advisory Group comprising a wide variety of interests and perspectives. The Local Advisory Group will meet once a year to monitor and review implementation of the Plan.
- ✓ The Churn Creek Protected Area will be managed for its nationally significant grassland conservation values. The historic Empire Valley Ranch continues to operate as a cow-calf ranch operation at its historic levels. Hayfields will be renovated, irrigation systems upgraded and dams and water systems restored to provincial standards.
- ✓ An industrial corridor providing access through the Protected Area has been confirmed, offering access through the Protected Area for logging, mining and other industrial users.
- ✓ The right to access placer claims through the Protected Area has been confirmed.
- ✓ The right to access private land through the Protected Area has been confirmed.
- ✓ Hunting and grazing has been confirmed as an acceptable use in the Protected Area.
- ✓ Trapping, guide-outfitting and recreational guiding are confirmed as acceptable uses in the Protected Area and will be authorized through permit.

## Management of Natural and Cultural Values

- ✓ Over 82% of the Protected Area will be managed as a Natural Environment Zone with no vehicle access.
- ✓ 4% of the Protected Area has been designated as a Special Feature Zone to allow for three large benchmark/no-grazing areas. These will be used primarily to increase understanding of how natural grassland ecosystems function.
- ✓ Three critical grassland lakes/riparian areas will be fenced, while providing water to livestock through innovative methods.
- ✓ An Archaeological Overview Assessment and Traditional Use Study will be undertaken in order to document the significant First Nations values in the Protected Area.

- ✓ Extensive baseline research has been undertaken on the Churn Creek grasslands to develop appropriate strategies for their continued restoration.
- ✓ A fire management plan will be developed to reintroduce fire into the Protected Area.
- ✓ Weeds will be mapped and chemical and biological controls considered for their control.
- ✓ A long term wildlife management plan will be developed with BC Environment and First Nations.

## Management of Recreation and Tourism

- ✓ A staging area for horseback riders and other Protected Area users will be developed at the Calving Barn. A campground may be developed at this site as use warrants.
- ✓ A parking lot and interpretative site will be developed near the Empire Valley Ranch headquarters.
- ✓ 6% of the Protected Area has been zoned Natural Environment – Motorized to permit vehicle access near scenic areas important for recreational activities.
- ✓ 2% of the Protected Area has been zoned Intensive Use/Recreation to permit recreation development and to allow for the continued activities of the Empire Valley Ranch.
- ✓ Access has been provided for recreation activities such as hunting, snowmobiling, horseback riding and hiking.
- ✓ An informal system of open trails providing non-motorized access to some of the most important and scenic areas will be developed.
- ✓ Recreational activities will be monitored for their potential impacts on natural and cultural values.
- ✓ Tourism activities such as wildlife viewing, ranch tourism and cultural tourism are generally acceptable in the Churn Creek Protected Area. A bed and breakfast may be developed at the Empire Valley Ranch headquarters.

# INTRODUCTION

## 1.1 Background to Churn Creek Protected Area

Churn Creek Protected Area was established in July 1995 as a result of the protected area recommendations contained in the Cariboo-Chilcotin Land Use Plan (CCLUP), and was among 16 other park and protected area designations in the Cariboo-Chilcotin. Although the Churn Creek Protected Area was established to protect its ecological values, a commitment was made that activities such as recreation, cattle grazing, hunting, trapping and backcountry tourism should continue to take place.

The *Environment and Land Use Act* and the *Park Act* and *Park Act and Recreation Area Regulations* provide the legal framework for the management of the Protected Area. The *Environment and Land Use Act*, by which this protected area was established, was created to accommodate the range of activities that were committed to in the CCLUP (specifically the Empire Valley Ranch and the Industrial Corridor), but not permitted under the *Park Act*.

## 1.2 The Management Planning Process

This management plan is prepared by BC Parks as a document to guide Protected Area management over a ten year term. Under the direction provided by the *Environment and Land Use Act* and the *Park and Recreation Area Regulations*, the management plan sets out objectives and strategies for conservation, development, interpretation and operation of the Protected Area. The management plan relies on information relating to such things as natural resources, cultural activities, and recreation uses in addition to activities occurring on surrounding lands. The process for preparing the plan involved analysis of the overall goals of the Protected Area, patterns of use, management objectives, and possible sources of conflict among Protected Area policies.

The management plan not only establishes long-term management direction for the Protected Area, but also deals with immediate issues. This means that the plan contains numerous statements describing management actions to be undertaken. Since BC Parks cannot carry out every task at the same time, the plan also sets out a schedule for implementation.

**Map One:**
***Churn Creek Protected Area***
***Place Names***
**Located in Appendix M: Map Folio**

BC Parks endeavors to prepare management plans with a high degree of public involvement. In the case of the Churn Creek Protected Area, two main groups provided direction on the creation of the plan - the Steering Committee and the Local Advisory Group. In addition, the Pitt Report, which is discussed below, also provided direction on long term management of the Protected Area and the design of the management planning process.

### 1.2.1 The Pitt Report

Following its purchase of the Empire Valley Ranch in the spring of 1998, government appointed Dr. Michael Pitt as an advisor on range resource management. Dr. Pitt, a professional agrologist and professor of range management/grassland ecology at the University of British Columbia, was asked to prepare a report with recommendations on range management in the Churn Creek Protected Area. Specifically, Dr. Pitt was asked to make recommendations on:

1) grazing regime options that balance grasslands conservation with long-term utilization of the grazing resources;
2) an allocation process for range opportunities in the Churn Creek Protected Area; and,
3) an interim range resources management strategy.

Dr. Pitt was also asked to consult with provincial and regional stakeholders and identify range related issues/concerns and suggestions on how they could be incorporated into the management plan for the CCPA.

The report contains several recommendations on how the planning process should be structured. Dr. Pitt says:

> "I recommend that a Management Team consisting of a Steering Committee and a Local Advisory Group should develop the Management Plan for the CCPA ... The Steering Committee would include the District Manager of BC Parks (or delegate), the Ministry of Forests (to assess and administer grazing management) and a representative of the Esketemc First Nation and Canoe Creek Band, respectively." (page 30, Pitt Report)
>
> "Within this structure, the Steering Committee assumes primary responsibility for ensuring development of the Management Plan. The Local Advisory Group must be engaged and involved in this process in a meaningful way." (p 31)
>
> "The Steering Committee should submit its recommended Management Plan for final approval to BC Parks, which retains ultimate responsibility because of the statutory responsibility for Provincial heritage and conservation values at the CCPA. Any required changes proposed by BC Parks to the recommended Management Plan should be reviewed and justified with the Steering Committee and the Local Advisory Group." (p 31)

A full copy of the Pitt Report is available from BC Parks.

### 1.2.2 Steering Committee

Following recommendations of the Pitt Report, the Steering Committee was formed in the fall of 1998 and had its first meeting in September. The Steering Committee consisted of Steve Mazur, the District Manager from BC Parks; Larry Camille, Chief of the Canoe Creek Band; Bill Chelsea, Chief from the Esketmec First Nation; and Ross Fredell, Range Resource Officer from the Ministry of Forests in Williams Lake. The Steering Committee met monthly to organize the planning process and provide planning staff with overall direction. In addition to assuming primary responsibility for the development of the Management Plan, the Steering Committee also assessed the criteria for long-term commercial opportunities and adjudicated proposals, addressed operational issues that arose at Churn Creek, and reviewed information provided to the Local Advisory Group.

### 1.2.3 Local Advisory Group

In the fall of 1998 approximately 100 people were sent a letter asking them to participate in a Local Advisory Group (LAG) to help in the development of a management plan for the Churn Creek Protected Area. These 100 people represented a broad cross section of interests and perspectives. As the process continued, an additional 80 people requested to be placed on the mailing list and to attend the LAG meetings.

The LAG met for the first time in December 1998 to discuss the planning process. At this December meeting, the LAG identified a number of key issues to be addressed in the plan. The issues included:

1. Ranch and Water Management
2. Grasslands Restoration and Wildlife
3. Recreation and Access
4. Cultural Heritage

The LAG agreed to meet again in January, March, May, July and September to discuss options to resolve these specific issues.

The main tool used by the LAG was an “options package.” In the months prior to a LAG meeting, BC Parks planning staff met with stakeholders, First Nations and technical resource people to determine the range of possible options that would “solve” an issue. For example, prior to the January meeting on Ranch and Water Management, staff met with ranchers, water managers, engineers, agricultural experts and First Nations. Together, eight options for ranch management and five options for water systems were identified.

Background information, maps and the pros and cons of each management option were put together in an "options package" and sent to members of the LAG two weeks prior to the LAG meetings.

At the LAG meetings (attended by an average of 35-65 people), background information was presented and each "option" was reviewed and discussed. Some options were discarded and others were substituted based on local knowledge and input from the group. At the end of the meeting, each option was placed on flipchart paper and posted on the wall. LAG members were given stickies and asked to place their stickie on their preferred option. The meetings ended with a discussion of the preferred options of the group. This formed the recommendations of the Local Advisory Group to the Steering Committee.

Definite choices of various options were tabulated for Ranch and Water Management and Recreation and Access, but this approach was considered inappropriate for Grasslands Management, Wildlife, Vegetation Management and Cultural Heritage. For these more technical issues, the LAG was given background presentations and then provided with suggested objectives and strategies, which were in turn discussed at the meetings.

Based on recommendations from the LAG, a first draft of the plan was written over the summer of 1999. BC Parks planning staff continued to meet with groups to clarify interests and fine tune the draft plan. The draft was distributed to the LAG by mail during the summer and discussed at a LAG meeting in September. At the September meeting the LAG decided a final meeting scheduled for later in the fall was not required – a final draft sent to them by mail was all that was necessary.

## 1.3 Relationship With Other Land Use Planning

### 1.3.1 Cariboo Chilcotin Land Use Plan

In 1995, the Cariboo-Chilcotin Land-Use Plan created 17 new parks and protected areas. The *CCLUP 90 Day Implementation Report* contains a significant amount of direction on the management of these new areas. Direction included:

- Dominant ecological values should be protected, and that uses such as recreation, cattle grazing (except Junction Sheep Range), hunting, trapping and backcountry tourism, will be allowed.
- Mining tenures fully within the boundaries will be extinguished. Fair compensation will be established through negotiation between the Provincial government and the affected tenure holders.
- Hunting and trapping will continue to be allowed.
- The park will be available, in principle and where appropriate, for commercial tourism and recreation. Development opportunities will be identified during area-specific management planning which will recognize the protection of the special natural values of each area and

the provision for public non-commercial recreation. In some circumstances, development opportunities may include "fixed roof" accommodation.

- Existing approved levels of cattle grazing will continue. The maximum level of animal unit months (AUMs) will be set at the existing level of authorized AUMs as of October 24, 1994.
- Existing approved levels of cattle grazing will continue in all protected areas. Opportunities for enhancing grazing for expressed management purposes may be addressed in subsequent management plans, which would be developed in consultation with affected operators.
- No private land will be included within protected areas unless the government negotiates a mutually-agreed purchase. Existing landowner use, development and access rights will be unaffected by protected areas.

In addition to this general direction, the *CCLUP 90 Day Implementation Report* contains specific direction on the Churn Creek Protected Area. This includes:

> "There will be a continuance of access and provision for utility corridor(s) (infrastructure necessary for mine development) along the existing roads, including any future upgrading as may be required for resource development, through the Churn Creek Protected Area ... for all resource and non-resource users. It is necessary that any subsequent Order-In-Council establishing this protected area and any subsequent protected area management plan must reflect this commitment."
> (*90 Day Implementation Report*, page 36)

> "All existing uses will continue in the Churn Creek Protected Area. This includes placer tenures on Churn Creek, but not other mineral tenures that may occur **within** the revised boundaries." (*90 Day Implementation Report*, page 36)

> "Access to both ranching lands and the Churn Creek placer tenures within this protected area will continue." (*90 Day Implementation Report*, page 36)

> "If a federal park is proposed, the Province will insist that it would not extend north of Churn Creek." (*90 Day Implementation Report*, page 37)

> "Churn Creek Protected Area contains a number of pre-existing placer tenures along Churn Creek which, as part of the cross-sectoral accord in the development of the Land-Use Plan, will retain present rights of access, use and development."
> (*90 Day Implementation Report*, page 34)

> "For Churn Creek and Homathko River-Tatlayoko Protected Areas, the Land Use Plan specifies provision for access and utility corridors for resource and non-resource users. The maintenance of existing access corridors is not without precedent, although it does challenge traditional management under the two statutes noted above [*BC Park Act* and the *Ecological Reserves Act*]. The commitment for future

development of access corridors, which is guaranteed by the Plan, would be a management challenge under those statutes."
(*90 Day Implementation Report*, page 34)

### 1.3.2 South Chilcotin Subregional Plan

In addition to the CCLUP, the other significant planning process that may affect the Churn Creek Protected Area is the South Chilcotin Subregional Plan (SCSRP). The SCSRP was initiated in 1996 to implement the CCLUP targets for the South Chilcotin Special Resource Development Zone, located adjacent to the Protected Area. The SCSRP process replaced the Churn Creek and Hungry Valley Local Resource Use Plans, which had been underway since the early 1990s.

The SCSRP, which was completed in the spring of 1999, contains a significant amount of direction on timber harvesting, access management, and recreation management. The Churn Creek Protected Area Management Plan is consistent with the SCSRP.

## 1.4 Relationship with First Nations

Portions of the Churn Creek Protected Area have been identified in the asserted Traditional Territories of five First Nation bands: Canoe Creek, Alkali Lake, Whispering Pines, Stone and Toosey.

BC Parks has recognized the historic importance of the Churn Creek/Empire Valley area to First Nations by including First Nation representation on the Churn Creek Protected Area Steering Committee. The involvement of First Nations at the Steering Committee level is consistent with the "government to government" relationship between the Province and First Nations.

The role of the Steering Committee, as outlined in section 1.2.2, is to provide overall guidance and direction in the preparation of this Protected Area Management Plan. Upon completion and approval of this Management Plan, the Steering Committee will shift its role from providing direction on *developing* the Plan to providing direction on *implementing* the Plan.

First Nations will continue to participate in quarterly Steering Committee meetings to discuss implementation of the Management Plan where it relates to any aboriginal rights that First Nations may assert in the area as well as other interests of mutual concern.

This Protected Area Management Plan will not prejudice any Treaty Negotiations.

## 1.5 Relationship with Ministry of Forests

In order to manage cattle, the Ministry of Forests works closely with BC Parks. The following are a number of key points that define the relationship between BC Parks and the Ministry of Forests. They come from the *Protocol Agreement between Ministry of Forests and the Ministry of Environment, Lands, and Parks - BC Parks (September 1997).*

*1)* Range Act agreements will continue to be administered and managed by the Ministry of Forests in accordance with the *Range Act* and the *Forest Practices Code of British Columbia Act*.

2) Apart from *Range Act* Agreements, BC Parks has jurisdiction over all matters concerning the Protected Area.

3) Range Practices (seeding, grazing schedules, structures and other developments) must be approved in the Range Use Plan.

4) The Range Use Plan must be consistent with the Protected Area Management Plan.

5) Range Use Plans will be created by the Ministry of Forests or the Agreement holder and will be referred to BC Parks.

6) Ministry of Forests will carry out the required enforcement actions on *Range Act* Agreement Holders according to the *Forest Practices Code of British Columbia Act* and associated legislation, policy and procedures.

BC Parks and the Ministry of Forests have agreed to an enhanced referral process for the Churn Creek Protected Area. This enhanced process includes:

a) Ministry of Forests Range staff will include BC Parks staff in the development of the Range Use Plan and will work cooperatively determining any new range related infrastructure or developments in the Churn Creek Protected Area. BC Parks will consult with Wildlife Branch for technical information on wildlife habitat needs.

b) Infrastructure developments will be discussed by the Steering Committee on a biannual basis.

c) Ministry of Forests will provide BC Parks with a flow chart showing proposed annual AUM usage rotational goals with sufficient short-term flexibility to address contingencies.

d) BC Parks will discuss any actions or developments that are likely to impact range quality with the Ministry of Forests.

# 2.0 PROTECTED AREA VISION AND ROLES

## 2.1 Significance

The 36,747 hectare Churn Creek Protected Area contains grassland conservation values and cultural heritage values of both provincial and national significance.

The narrow band of valley-bottom grasslands that occur along the Fraser, Thompson and Chilcotin Rivers and in the Southern Okanagan are actually the continuation of a system of deserts and grasslands that occur on the dry east sides of mountain ranges all the way from California to British Columbia. The bunchgrass grasslands occurring at Churn Creek exist at the most northern extent of this large arid and semiarid area, making it one of a kind in Canada. The Protected Area encompasses a great diversity of near natural grasslands, and contains large areas of low, mid and high elevation grasslands with a variety of aspects as well as wetlands and forests. This is combined with an exemplary variety of landforms created by glacial and fluvial processes, erosion and mass movement.

The resulting open landscape of terraces, kettle lakes, hoodoos and gullies, together with the massive Fraser River Canyon is among the most scenic in the Province. This diversity is distinctive in the Province's protected area system, making Churn Creek the most significant grassland protected area west of the Rockies.

In addition to its grassland values, Churn Creek contains regionally significant wildlife populations. A mule deer herd of 2000-3000 uses a majority of the Protected Area and three distinct herds of California bighorn sheep (2 migratory and one resident herd) use the grasslands. Numerous red and blue listed species are also associated with the grasslands.

Culturally, Churn Creek is regionally significant as it has been occupied and used by groups of Secwepemc and Ts'ilqot'in Nations, who have developed a distinct riverine and grasslands adaptation to the land.

Recreationally, Churn Creek is regionally significant for its hunting, horseback riding, wildlife viewing and mountain biking opportunities. Its relatively close access to Williams Lake, 100 Mile House and Clinton make it a popular destination for hunters and horseback riders from the Lower Mainland, Okanagan and the Cariboo.

## 2.2 Context

Churn Creek represents 28,112 hectares of the Fraser Basin (FRB) ecosection, 8,251 hectares of the Chilcotin Plateau (CHP) ecosection and 384 hectares of the Central Chilcotin Range ecosection. Other protected areas in the FRB ecosection include the Big Creek Ecological

Reserve and Junction Sheep Range Park. Together these three areas protect 14% of this relatively small ecosection. Other protected areas in the CHP ecosection include Nazko Lake Park, Big Creek Park, Bull Canyon Park, Nunsti Park and Stum Lake/White Pelican Park. Together with Churn Creek, these areas protect 4.0% of the CHP ecosection.

Across British Columbia, Churn Creek is one of five large Protected Areas that focus specifically on the conservation of grasslands. Lac du Bois Park, located in the Thompson River Basin ecosection near Kamloops, protects 1,779 hectares of Lower and 5,019 hectares of Middle Grasslands; Junction Sheep Range Park in the Fraser Basin ecosection protects 1,312 hectares of Lower and 3,238 hectares of Middle Grasslands, Tunkwa Park in the Southern Thompson Uplands protects 4,845 hectares of Middle and Upper grasslands, and Edge Hills Park, located in the Pavillion Ranges ecosection represents another 1,468 hectares of Lower Grasslands. Churn Creek is the only area with significant areas of Upper, Middle and Lower Grasslands.

A number of smaller parks and ecological reserves also protect modest grassland areas. They include Kikomun, Elephant Hill, and Cornwall Provincial Parks, and Soap Lake, Hayne's Lease, Trout Creek, Tranquille and Big Creek Ecological Reserves. Small grassland areas are also captured residually in larger areas like Okanagan Lake Provincial Park and in smaller recreational focused areas in the southern Interior such as Sun-Oka, Juniper Beach, Steelhead, and Savona Provincial Parks.

**Map Two:**
***Regional Context of the Churn Creek Protected Area***
**Located in Appendix M: Map Folio**

## 2.3 Vision Statement

The vision statement outlined below is intended to provide direction for the long term management of the Churn Creek Protected Area**.** The vision statement describes the condition of the Protected Area 50 years from now if the intent of the Management Plan is followed. *It is not meant to describe the current condition of the area*. The vision statement is used to provide context and guidance for managers to make decisions about stewardship, recreation and other activities in the Protected Area.

*The prime role of the Churn Creek Protected Area is to conserve and restore nationally significant grasslands and wildlife populations while maintaining a viable, year-round working ranch. The fragile nature of the grasslands and wetlands and their importance for wildlife habitat are recognized in management. Protected Area management also reflects the historic importance of Churn Creek for First Nations, ranchers, hunters, miners, and recreational users. Traditional use of the area by First Nations continues.*

*The grasslands continue to recover in condition since management regimes changed in the early 1990s. Wetlands and riparian areas are healthy and function as they should. Forest encroachment into the grasslands has been controlled and natural processes such as fire have been reintroduced. The spread of noxious weeds has also been controlled and their populations are declining. Areas that were logged prior to the Protected Area being created are now young forest and old roads are growing over. Research and monitoring has increased our understanding and knowledge of grassland ecosystems and the wildlife that live in them.*

*Private land holders and placer miners are continuing to use their property as they desire and have rights to access and develop these lands subject to any relevant regulations. An Industrial Corridor passes through the middle of the Protected Area and provides access for mining, logging and other industrial users. The area continues to be managed consistent with the plan developed in 1999 unless that plan was changed through another public process.*

*Low impact recreation that does not detract from values of the Protected Area is allowed, but visitor numbers are managed to protect the natural ecological integrity of the area. Trails for horseback riders, hikers and mountain bikers have been established in less sensitive areas to limit the impact of people on grasslands and wildlife. Corridors for snowmobiles and a network of roads separate motorized from non-motorized recreation. The less-structured, day use nature of Churn Creek is still the focus of recreation, but a staging area or campsite is established to provide basic services for visitors. Commercial tourism facilities are located outside the Protected Area boundary.*

*Opportunities are provided for visitors to learn about First Nations culture; how ranching coexists with protected spaces; about the sensitivity and uniqueness of grassland ecosystems; and the history and culture of the area. First Nations, local*

*residents and organizations develop partnerships with BC Parks to help in the stewardship and management of the Protected Area.*

## 2.4 Protected Area Strategy Roles

The vision statement (see 2.3 above) is based, in part, on the conservation and recreation contributions the Churn Creek Protected Area makes to the Province's *Protected Areas Strategy*. The roles for Churn Creek are described below and provide the general purpose of the Protected Area. Together with the vision statement, these roles help guide the management strategies and user activities in the Protected Area.

**Roles of Churn Creek Protected Area**

***Conservation Role***

- Churn Creek is representative of the dry vegetation found in the Bunchgrass grassland and Interior Douglas-fir environments of the Fraser Basin and Chilcotin Plateau Ecosections. It contains eight biogeoclimatic subzones and variants, including:

| Biogeoclimatic Subzone or Variant | Total Amount in Province (ha) | Total Amount Protected in Province (ha)[1] | Amount Protected in Churn Creek (hectares) | % of Provincial Total Protected in Churn Creek |
|---|---|---|---|---|
| BGxh3 variant, | 26,859 | 7,514 | 4,475 | 60% |
| BGxh2 variant | 75,068 | 2,956 | 8 | <1% |
| BGxw2 variant | 57,343 | 10,416 | 7,189 | 69% |
| **Total Bunchgrass** | **291,781**[2] | **27,586**[3] | **11,672** | **42%** |
| IDFxm subzone | 245,568 | 16,677 | 16,275 | 98% |
| IDFdk3 variant | 908,417 | 11,571 | 1,042 | 9% |
| IDFdk4 variant | 393,778 | 8,662 | 5,535 | 64% |
| **Total Interior Douglas-fir** | **4,245,415** | **175,346** | **22,852** | **13%** |
| SBPSxc subzone, | 1,024,581 | 33,776 | 1,643 | 5% |
| **Total Sub Boreal Pine Spruce** | **2,136,093** | **200,462** | **1,643** | **<1%** |
| MSxv subzone | 824,597 | 60,755 | 480 | <1% |

[1] As of March 1, 2000

[2] Totals in this column include all of the BG, IDF, MS and SBPS subzones and variants, some of which are not present in Churn Creek.

[3] Totals in this column include all of the BG, IDF, MS and SBPS subzones and variants, some of which are not present in Churn Creek.

| | | | | |
|---|---|---|---|---|
| **Total Montane Spruce** | **2,641,176** | **188,638** | **480** | **<1%** |
| **Lake** | **2,111,175** | **279,086** | **99** | **<1%** |

- Numerous kettle lakes, wetlands, creeks, slump areas and other large riparian areas representative of grassland and the Interior Douglas-fir forest/grassland transition environment can be found in the Protected Area.
- Includes an elevational sequence of biogeoclimatic zones from Bunchgrass to Interior Douglas-Fir, to Sub-Boreal Pine Spruce and to Montane Spruce.
- Protects regionally significant habitat and populations of mule deer (spring, summer and winter habitat) and three distinct herds and lambing areas of California bighorn sheep (migratory and resident).
- Includes spectacular hoodoos and erosional features in the Churn Creek gorge and along the Fraser River that are representative of the Fraser River corridor.
- Contains numerous red and blue listed species (see Appendix A *or Section 4.4 Fish and Wildlife* for details).

### *Recreation Role*

- The recreation role (public and commercial) of the Churn Creek Protected Area is focused on limited, low-impact opportunities in a grassland and forested setting, including hunting, wildlife viewing, horseback riding, hiking and mountain biking. A network of open roads provide motorized access for hunting and for people with limited abilities, while large non-motorized areas provide settings for hiking, horseback riding and backcountry camping in a natural setting. Condition of roads and lack of potable water limit backcountry opportunities.
- Agro-tourism (including cultural tourism) at the Empire Valley Ranch furnishes an opportunity for ranch-based tourism that is unique across the Protected Area system.

### *Cultural Heritage Role*

- First Nations use includes past settlement of the area as well as a number of significant archaeological sites. First Nations continue to use the area to practice aboriginal rights such as hunting.
- The Churn Creek area provides the opportunity to appreciate several themes important to the history of British Columbia. Activities of Chinese miners, while not well understood, left a large impact on the area and provided infrastructure to the ranchers that followed. As well, the Empire Valley Ranch provides an excellent example of the settlement and development of a historic and still operating interior cattle ranching operation.

# 3.0 PROTECTED AREA ZONING

BC Parks uses zoning to assist in the planning and management of provincial parks and protected areas. In general terms, zoning divides an area into logical units to apply uniform and consistent management objectives for conservation and recreational values. The zones reflect the intended land use, existing patterns of use, the degree of human use desired, and the level of management and development required.

At one end of the spectrum, the Intensive Recreation Zone indicates a portion of a park or protected area that is appropriate for high levels of recreation and facility development. At the opposite end, the Wilderness Conservation Zones indicate an area of a park or protected area that receives the highest level of resource protection and minimal human presence. Between these two extremes, there are three additional zones providing a range of conservation and recreation priorities - Natural Environment Zone, Special Feature Zone and Wilderness Recreation Zone.

It should be recognized that Churn Creek does not fit into BC Parks' standard approach to zoning recreation/conservation oriented parks. The focus on grasslands conservation balanced with ranching, wildlife protection and pre-existing uses make zone titles like "Wilderness Recreation" awkward and unwieldy. Visitors should be aware of the ranching history of the area and understand the impacts cattle may have on recreational experiences.

The majority of the Churn Creek Protected Area is in the *Natural Environment Zone*, which is further subdivided into a *Motorized Sub-zone* and a *Non-Motorized Sub-zone*. The *Natural Environment – Motorized Sub-zone* provides vehicle access to two areas - Goose Lakes in North Churn and Iron Gate Road in South Churn - that have traditionally been accessed by motor vehicle. The *Natural Environment – Non-Motorized Sub-zone* allows for non-motorized recreation experiences.

Three areas are categorized as a *Special Feature Zone*. These are intended to be Benchmark Areas that will have minimal human use and no cattle grazing. They will be used for research and to increase understanding of grassland ecosystems.

The area that includes the Calving Barns, Ranch HQ and hayfields is an *Intensive Use/Recreation Zone*, recognizing the future role of the Calving Barns as both a resource for the ranch and as a staging area/campground for visitors.

**Map Three:**
***Churn Creek Protected Area***
***Zoning***

**Located in Appendix M: Map Folio**

## 3.1 Natural Environment Zone

The primary objective of this zone is to conserve natural resources and to maintain the natural diversity and function of ecosystems in the Protected Area while providing a mix of motorized and non-motorized recreation in a largely undisturbed natural environment. The Natural Environment - Motorized Sub-zone is 4,074 hectares, or 6.2% of the Protected Area. The Natural Environment – Non-Motorized Sub-zone is 29,483 hectares, or 81.9% of the Protected Area.

Strategies for this zone include:

- Facility development is minimal, at a level sufficient to satisfy user needs and to protect the overall environment of the Protected Area.
- Relatively low use with limited vehicle access to protect the natural values of the area and recreation experience as well as to limit impacts.
- Livestock grazing continues.

## 3.2 Intensive Use/Recreation Zone

The primary objective of this zone is to provide for an all-weather road accessible staging area/campground as well as accommodating the intensive non-recreation activities associated with the hayfields and ranch HQ. The management intent of this designation is to continue to allow the ranch operations to use the Calving Barns on a priority basis while allowing horseback riders and other recreationists to use the corrals as a staging area for trips into the Protected Area and backcountry beyond the Protected Area. This zone is 1,011 hectares in size, representing 2.8% of the Protected Area.

Strategies for this zone include:

- Providing a campground in the mid to long-term as demands warrant
- Using the Calving Barns as a staging area
- Providing a small interpretive site and parking lot adjacent to the Empire Valley Ranch headquarters.
- Providing some limited visitor services
- Providing interpretative facilities
- Cattle grazing and hay production continues.

## 3.3 Special Feature Zone

The primary objective of the Special Feature Zone is to provide a high level of protection to several Benchmark Areas across the Protected Area. The total size of this zone is 1,412 hectares, or 3.9 % of the Protected Area.

Strategies for this zone include:

- Conservation of natural resources take precedence over recreation in this zone
- Benchmark Areas will be monitored to provide a better understanding of how natural processes in grassland ecosystems work. See *Section 7.0 – Benchmark Areas*, for more details.
- Cattle grazing will not continue in these Benchmark Areas.

Photo by Chris Hamilton

**Photo One: Looking north along the Fraser River landscape. These lower slopes encompass a portion of the Clyde Mountain Benchmark Area.**

# 4.0 MANAGEMENT OF PROTECTED AREA VALUES

## 4.1 Grasslands Restoration and Management

The Churn Creek Protected Area (CCPA) was created to represent and conserve its nationally significant grassland ecosystems. While some of these grasslands are in nearly natural condition, others have been significantly impacted by past land uses such as mining, cultivation and livestock grazing.[4] One of the most significant tasks of this management plan is to develop ways to manage, and where necessary, restore grasslands while maintaining grazing levels (animal unit months, or AUMs) set out in the Cariboo-Chilcotin Land Use Plan. Overall grassland objectives and more detailed strategies for each Range Unit or pasture are outlined in the following pages.

The Churn Creek Protected Area contains representation of three major grassland types: These include 4,475 hectares of the Fraser Variant of the Very Dry Hot Bunchgrass Biogeoclimatic Subzone[5] (BGxh3), 7,189 hectares of the Alkali Variant of the Very Dry Warm Bunchgrass Biogeoclimatic Subzone (BGxw2) and 16,275 hectares of the grasslands of the Very Dry Mild Interior Douglas-fir Biogeoclimatic Subzone (IDFxm).

For the purposes of this plan, we will use the terms 'Lower Grassland' for the BGxh Biogeocimatic Subzone, 'Middle Grassland' for the BGxw Biogeoclimatic Subzone, and 'Upper Grassland' for the IDFxm Biogeoclimatic Subzone.

Detailed descriptions of grassland ecosystems can be found in *Appendix I: Description of Major Grassland Ecosystems in Churn Creek*

### Use of Seral Stage Analysis and Percent of Non-Native Species

For the purposes of this Management Plan, the main indicator used to describe the condition of the grasslands is *seral stage*.

[4] It should be noted that changes in management in the early 1990's have improved the condition of the grasslands and the current trend is towards increased improvement.

[5] A biogeoclimatic zone is defined as "a geographic area having similar patterns of energy flow, vegetation, and soils as a result of a broadly homogenous macro-climate." The Biogeoclimatic Ecosystem Classification (BEC) system is a principal tool used to classify and describe ecosystems in British Columbia. There are 14 biogeoclimatic zones in the province. These zones are subdivided into biogeoclimatic subzones (98 in BC) which have a more uniform climate than zones and have unique plant communities. Subzones in turn are subdivided into biogeoclimatic variants, which describe small variations in climate and vegetation within a subzone. This results in a total of 168 units (subzones and variants). For example, within the CCPA, the Bunchgrass (BG) Biogeoclimatic Zone includes two subzones: the Very Dry Hot BG and the Very Dry Warm BG. The Very Dry Hot BG Subzone in the CCPA is then further subdivided into two variants: Thompson and Fraser. Other subzones and variants of the Bunchgrass Zone occur in other parts of B.C.

## Seral Stage

Seral stage is defined in the *Forest Practices Code of British Columbia Biodiversity Guidebook* as:

> "the stages of ecological succession of a plant community, for example from young stage to old stage; the characteristic sequence of biotic communities that successively occupy and replace each other..."

Seral stage is closely related to the concept of Potential Natural Community (PNC). The *Biodiversity Guidebook* defines PNC as "the plant community that would be established if succession were allowed to be completed without further human interference." PNC can be thought of as the *potential* vegetation of a site.

Seral stage is an ecological measure of the current condition of a grassland compared to the PNC for the site. It is determined by assessing the percent similarity of species presence and abundance between the present vegetation and the Potential Natural Community for the site. Seral stages are divided into four classes based on percent similarity to the Potential Natural Community:

| % Similarity to PNC | Seral Stage |
|---|---|
| 0-25 | Early |
| 25-50 | Mid |
| 50-75 | Late |
| 75-100 | Climax |

The condition of a grassland, as measured by the seral stage, is different from its *forage* condition. Seral stage is based on species composition and abundance while forage condition is related to the *quantity* and *quality* of forage available (protein, energy, mineral and palatability). Grasslands in early seral stage may require several decades to complete a successional change to late seral condition while forage condition can improve in a few weeks.

## Non-Native Plants

One objective of parks and protected areas in British Columbia is to protect ecosystems in their natural state. While seral stage is a good indicator of range condition, the proportion of non-native species further indicates how far the plant community is modified, compared to its original state. Seral stage calculations completed for this Plan did not take into account introduced species. All future calculations and assessments of grassland plant communities should use the percent of non-native as another measure to monitor "naturalness" or degree or modification of grasslands.

## Objectives

The following objectives for the seral stage condition of grasslands are taken primarily from the *Forest Practices Code of British Columbia Biodiversity Guidebook*. The *Biodiversity Guidebook* describes the minimum proportion of a landscape area that should be in various seral stages in order to meet biodiversity conservation objectives.

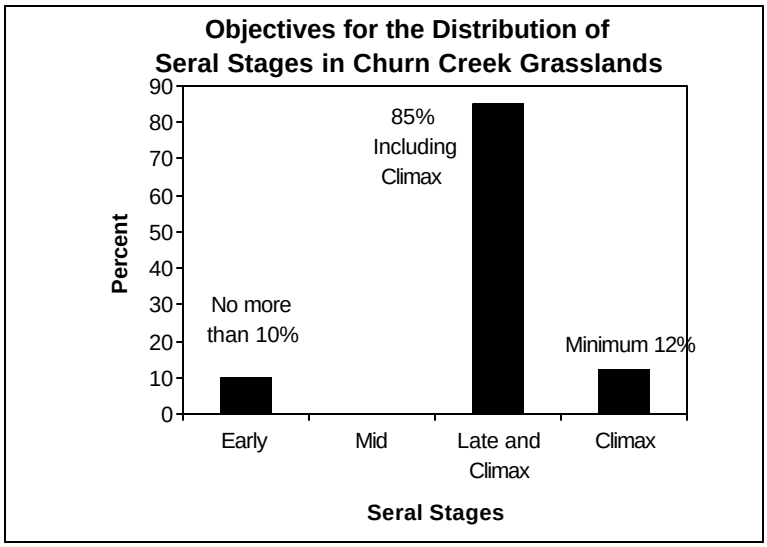
- Maintain the following seral stage proportions within each grassland biogeoclimatic unit (Lower, Middle, and Upper grasslands) as a whole **and** within each ecosystem unit (site series) individually (see graph and technical note 1 below):
  - at least 12% in climax seral stage;
  - at least 85% in combined late seral and climax seral stages; and
  - no more than 10% in early seral stage[6]
- Where these seral targets are not met, manage livestock grazing to achieve a seral stage recovery rate that is at least 75% of that which would occur if grazing were excluded altogether (see technical note 2 below).
- Maintain AUM allocations as per CCLUP.
- Maintain suitable habitat for red and blue listed species. (See Appendix A)
- Protect unique, unusual and rare micro-habitats, such as aspen groves.
- Promote and demonstrate excellent and innovative grassland and range management strategies.
- Control noxious weeds and prevent the spread of non-native species.
- Maintain or restore natural processes including fire.
- Maintain riparian areas in Proper Functioning Condition (PFC)[7].

[6] Note that these figures do not add to 100%. This is because mid seral condition is considered residual and does not have a target. The graph on the following page shows that late and climax seral conditions are considered ***together*** for assessment purposes. The objectives set a target of minimum of 85% in late and climax (of which at least 12% of that has to be climax) + a maximum of 10% in early. As an example, objectives would be met if 8% were in early, 86% late and climax and 14% climax. In that case, mid seral condition would, by default, be 6% (8% early, 86% late and climax =94%).

[7] For the purposes of the Churn Creek Protected Area Management Plan, Proper Functioning Condition (PFC) is defined as:

Riparian and aquatic areas which function properly because there is adequate structure (vegetation, landform, or large woody debris) present to provide the following benefits applicable to a particular area:

- Dissipation of stream energy associated with high waterflows, thereby reducing erosion and improving water quality
- Filtering of sediment, capture of bedload, and aid in floodplain development
- Maintenance of natural flood-water retention and ground water recharge
- root masses that stabilize streambanks against cutting action
- ponding and channel characteristics to provide the habitat and water depth, duration and temperature necessary for fish production, waterfowl breeding and other uses
- maintenance of habitats for native plants and animals.




*Technical Notes:*

1. For the Churn Creek Protected Area, the seral stage targets are applied to **individual** biogeoclimatic subzones and individual ecosystems rather than the **entire** biogeoclimatic (BEC) zone. The main implication of this approach is that seral stage shortfalls in any one BEC subzone would not be compensated by excesses above targets in a second subzone of the same BEC zone. That is, the Churn Creek Protected Area approach might identify a seral stage problem that would not be identified by the procedure generally used on the Provincial Forest. In cases where one subzone might have seral stage proportions far short of seral stage targets and a second subzone have proportions near or only slightly above targets, the Churn Creek Protected Area approach would isolate the shortfall to the single subzone.

When used for management of grasslands where two or more biogeoclimatic subzones of one biogeoclimatic zone are present, the Churn Creek Protected Area approach is a more sensitive assessment of seral stage condition and management than the approach used on the Provincial Forest outside the Protected Area.

2. If any biogeoclimatic subzone/variant or ecosystem unit (site series) currently does not meet seral stage objectives, the "Manage livestock grazing to achieve a seral stage recovery that is at least 75% of that which would occur if grazing were excluded altogether" objective would only apply on the shortfall proportion of the area.

## Current Condition of Grasslands

The first objective outlined above sets out a seral stage target of at least 85% late and climax (at least 12% of which has to be climax), and a maximum of 10% in early seral condition. As explained in the technical notes, these targets apply to all three biogeoclimatic subzones (Upper, Middle and Lower Grasslands) **as well as** to individual ecosystems.

To develop meaningful strategies for the long-term management and continued restoration of the grasslands at Churn Creek, a thorough understanding of the current condition of the grasslands was necessary. This involved determining the overall current seral stage distribution for:

- each biogeoclimatic subzone;
- individual site series in each biogeoclimatic subzones (*see 'Appendix J – Method for Determining Principal Ecosystems*' for more details); and,
- each Range Unit.

The method used to estimate current condition is described in *Appendix K: Current Condition of Principal Ecosystem Units by Biogeoclimatic subzone.* Information on the overall current seral condition of biogeoclimatic subzones as well as the current seral condition of individual site series can also be found in *Appendix K*.

The following section contains detailed strategies by Range Unit. Information provided for each Range Unit includes:

- a physical description of the unit;
- information of how it has historically been used by livestock;
- wildlife use of the unit;
- current condition of the Principal Ecosystem Units in the Range Unit;
- management issues; and,
- strategies.

Again, readers who desire more background information on some of the more technical aspects of the section should refer to *Appendix K*.

Information on the red and blue listed species that are known or suspected in each Range Unit can be found in *Appendix A: Critical Habitats.*

**Map Four:**
***Churn Creek Protected Area***
***Biogeoclimatic Zones and Pastures Map***
**Located in Appendix M: Map Folio**

## Strategies by Range Unit

*Appendix D - Innovative Range Management Techniques* provides a "tool kit" of information on specific operational strategies and options that may be used to improve the condition of grassland areas.

### Fraser South Range Unit

#### *Physical Description of Unit*

Fraser South Range Unit is the largest unit in the Churn Creek Protected Area. It occurs south of Clyde Mountain and is bordered by the Fraser River to the east, Lone Cabin Creek to the south and the boundary of the Protected Area to the west. The area includes significant areas of Upper, Middle and Lower grasslands.

The landscape of the South Fraser Range Unit contains a varied topography. Lower elevations are dominated by sagebrush- or grass covered gently sloping benches above steep, sparsely vegetated eroding slopes leading to the Fraser River and Lone Cabin Creek. McGhee Flats is the largest undissected terrace in this Range Unit. Numerous gullies and ridges also dominate lower elevations of this Range Unit.

Moderate and higher elevations are dominated by cool aspect forests and grasslands on gentle to steep slopes. Lakeshore riparian and wetland ecosystems are relatively common in Upper Grassland basins. Hog, Grouse, Round and Coffee are the principal lakes in the unit. Streamside riparian ecosystems are narrow and largely restricted to lower and toe slopes adjacent to the Fraser River and Grinder, Lone Cabin and Higgenbottom Creeks.

#### *Historic Domestic Livestock Use*

In the last 100 year this area has been grazed at various times by domestic sheep, horses and cattle. More recently, lower elevations of the Range Unit were used as spring range and cattle were moved to progressively higher elevations as the season progressed. Principal watering sources for livestock occur in the Middle and Upper grasslands as access to the Fraser River is severely restricted by steep topography. Water is seasonally available in natural depressions, streams and man-made dugouts in the Middle and Upper grasslands.

In addition to domestic livestock use, many of the Lower and Middle grassland level benches with adjacent steep escape terrain receive significant year round grazing from bighorn sheep and winter and early spring use by mule deer.

#### *Wildlife Use*

- Important bighorn sheep winter range occurs at McGhee Flats and on other sites in the Lower Grasslands along the Fraser River.
- A sensitive bighorn sheep lambing area at the mouth of Lone Cabin Creek.

- Critical early spring feeding sites for mule deer, particularly on warm aspects slopes and ridges such as Sheep Point north of Lone Cabin Creek.
- Gullies and slopes in the Lower Grasslands with scattered older Douglas-fir and ponderosa pine trees provide important breeding and rearing habitat for Lewis' woodpecker.

Photo by Chris Hamilton

**Photo Two: Coffee Lake in the Fraser South Range Unit**

### *Current Seral Conditions of Principal Ecosystem Units*

**Current Seral Condition of Principal Ecosystem Units in the Fraser South Range Unit**

| Principal Ecosystem Unit | Seral Stage Representation[1] | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Lower Grasslands | | | | |
| Gentle slopes and terraces – Sage | **3** | 2 | **2** | **1** |
| Gentle slopes and terraces – Grass | **3** | 3 | **1** | **1** |
| Steep cool slopes – Grass | 1 | 2 | **4** | 2 |
| Steep warm slopes – Sparsely vegetated | 1 | 1 | 5 | 4 |
| Moderate to steep slopes – Sage | **2** | 3 | **2** | **1** |
| Streamside riparian | 1 | 2 | **4** | **1** |
| Middle Grasslands | | | | |
| Talus | 1 | 1 | 5 | 5 |
| Well drained broad ridges, gentle slopes and moderate east-facing slopes | 1 | 3 | **2** | **1** |
| Steep warm slopes | 1 | 1 | 5 | 2 |
| Steep cool slopes | 1 | 1 | 5 | 3 |
| Streamside riparian | 1 | 2 | **4** | **1** |
| Lakeshore riparian and wetlands[1] | **3** | 3 | **0** | **0** |
| Moist depressions and swales | **2** | 3 | **2** | **1** |
| Upper Grasslands | | | | |
| Talus | 1 | 1 | 5 | 5 |
| Gentle to moderate slopes and terraces | **2** | 3 | **2** | **1** |
| Steep cool slopes | 1 | 1 | 5 | 3 |
| Steep warm slopes (uncommon) | 1 | 2 | **4** | 2 |
| Moist depressions and swales | 2 | 4 | **2** | **0** |
| Aspen copses (uncommon) | 1 | 3 | **3** | **1** |
| Lakeshore riparian and wetlands | **2** | 3 | **2** | **1** |

[1]Seral stage percentage classes: 1: 0-10%; 2: 11-35%; 3: 36-65%; 4: 66-84%; 5: ≥85%; **bolded** numbers indicate representation does not meet a target (i.e. early representation is greater than the target or late+climax or climax representation is less than the target.)

The seral stage of grasslands varies considerably from site to site in the Lower and Middle grasslands of this unit. As a result of past domestic livestock grazing and current levels of wildlife use, most terraces and gentle to moderate slopes are in early and mid seral stage. McGhee

Flats, adjacent terraces and their adjoining lower slopes show particularly heavy use by wild ungulates. Small low lying areas on McGhee Flats where there is abundant big sagebrush have late seral ecosystems while the remainder of the flats have early to very early seral ecosystems. Where bighorn sheep and mule deer are the principal grazers there is no indication that seral stage is improving. Sheep Point, a large, broad ridge occurring in the Middle Grasslands, has predominantly late seral and climax ecosystems.

Most streamside riparian areas in the Lower Grasslands have poor access and as a result are in late seral to climax condition. Similar ecosystems in the Middle and Upper grasslands are more easily accessed and are more heavily impacted.

**Photo Three.**
**The riparian area at Hog Lake in the Fraser South Range Unit**

Photo by Chris Hamilton

Most of the Upper Grassland areas in this Range Unit show an improving trend. Late seral ecosystems in the Upper Grasslands tend to occur furthest away from livestock watering sources and roads while areas immediately adjacent to water and roads often have a higher proportion of early seral ecosystems.

### Management Issues

The condition of grasslands on gentle to moderate slopes in the Lower and Middle Grasslands fall significantly short of seral stage targets. It is important to note that current seral stage condition on much of the Lower Grasslands appear to be maintained by high levels of native ungulate use. Seral stage targets are also not met in moist swales and depressions and lakeshore riparian and wetlands in the Upper Grasslands of this Range Unit.

The principal weeds in the unit are hounds-tongue and burdock. These occur primarily on disturbed soils along roads and in moist gully bottoms. Cheatgrass, an aggressive introduced annual grass, is common in early seral ecosystems in the Lower and Middle grasslands. On some terraces in the Lower Grasslands it forms the dominant cover. Introduced species of the mustard family are common on disturbed soils in the Upper Grasslands. Kentucky bluegrass is common and often dominant on moist sites in the Upper Grasslands.

Forest encroachment onto the Upper Grasslands is common in this Range Unit. Encroachment is primarily Douglas-fir and minor amounts of aspen.

The principal grassland management and restoration issues in the Fraser South Range Unit are the lack of late seral and climax ecosystems, the restoration of lakeshore riparian and wetland areas, and forest encroachment on grasslands. The lack of late seral and climax ecosystems throughout much of the Lower Grasslands are at least in part attributed to their heavy use by bighorn sheep and mule deer.

## Strategies - Fraser South Range Unit

- Where the seral stage condition in the Lower Grasslands is principally attributed to domestic livestock grazing establish an upward trend in the early and mid seral stages of terraces and gentle to moderate slopes.
- Maintain upward trend of seral stage development on gentle and moderate slopes in the Middle and Upper grasslands
- Investigate the role of native ungulates in seral stage development in the Lower and Middle grasslands
- Restore riparian ecosystems to late seral/climax stages (e.g. Hog, Coffee and Grouse Lakes)
- Establish photo-monitoring points at principal lakeshore riparian and wetland areas
- Restore fencing around Coffee Lake while providing access for livestock.
- Restore high priority encroached grasslands in the IDFxm

- Control weed species - consider using chemicals for spot applications

## Fraser North Range Unit

### *Physical Description of Unit*

The Fraser North Range Unit is the second largest Range Unit in the Protected Area, stretching from Churn Creek and Dry Lake Pasture south to Clyde Mountain, including the eastern side of Clyde Mountain. Airport Flats mark the southwestern edge of the unit.

The area is dominated by Middle and Lower grasslands, with minor areas of Upper grasslands at the higher elevations of the western edge. The terrain is complex with steep forested and grassland slopes leading down to rolling hills and benches dissected by deeply incised gullies. Below the benches, steep eroded slopes lead down to the Fraser River. Small benches occur on some of these steep slopes. There are narrow riparian ecosystems scattered along the floodplain of the Fraser River.

### *Historic Domestic Livestock Use of Unit*

Fraser North Range Unit can be subdivided into four separate pastures. Fraser North follows the Empire Valley Road from Coal Pit to the Calving Barn; Airport Pasture is on the plateau west of the Empire Valley; and Dry Lake is at the north end of the unit adjacent to Churn Creek. The Fraser River Benches on the east side of Clyde Mountain have been designated as a Benchmark Area.

Historically, Fraser North and Dry Lake Pastures were used for early spring and fall use. The cattle were pushed off the hayfields at the Calving Barn. Cattle would generally gather at the water sources and would have to be pushed into the drier sites as they drifted towards Dry Lake. Overall, they would spend one to two months on these two pastures, including a brief time in the fall after returning from the mountains.

Airport Pasture has received mixed use over the years, generally focused during the late spring or fall. The Fraser River Benches to the east of Clyde Mountain have historically been used as a winter bull pasture, although they were also used for early spring grazing.

### *Wildlife Use*

- Critical bighorn sheep winter range occurs on the eastern side of Clyde Mountain and in the Dry Lake area
- The Douglas-fir forests scattered throughout this area provide critical mule deer winter range during deep snow periods as well as thermal and security cover
- Open grasslands and south aspects are important spring range for mule deer during the initial green-up period in April through May
- Aspen-dominated riparian draws and cottonwood forests adjacent to the Fraser River provide excellent habitat for birds, snakes and small mammals; the water body and associated riparian areas around Onion Lake are extremely important habitats

### *Current Seral Condition of Principal Ecosystem Units*

**Current Seral Condition of Principal Ecosystem Units in the Fraser North Range Unit**

| Principal Ecosystem Unit | Seral Stage Representation[1] | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Lower Grasslands | | | | |
| Talus | 1 | 1 | 5 | 5 |
| Gentle Slopes and Terraces – Sage dominated | **2** | 3 | **2** | **1** |
| Gentle Slopes and Terraces – Grass dominated | **2** | 3 | **2** | **1** |
| Moist Depressions and Swales | **4** | 0 | **2** | **1** |
| Steep cool slopes – Grass Dominated | 0 | 2 | 5 | 3 |
| Steep warm slopes – Sparsely Vegetated | 0 | 1 | 5 | 4 |
| Moderate to steep slopes – Sage dominated | 1 | 4 | **2** | **1** |
| Streamside riparian | 1 | 2 | **4** | **1** |
| Lakeshore Riparian and Wetlands | **2** | 4 | **1** | **0** |
| Middle Grasslands | | | | |
| Talus | 1 | 1 | 5 | 5 |
| Gentle to Moderate Slopes and Terraces | **2** | 3 | **2** | **1** |
| Moist Depressions and Swales | **3** | 3 | **0** | **0** |
| Steep Cool Slopes | 0 | 2 | 5 | 3 |
| Steep Warm Slopes | 0 | 0 | 5 | 3 |
| Aspen Copses | **2** | 2 | **3** | **1** |
| Streamside Riparian | 1 | 3 | **3** | **1** |
| Lakeshore Riparian and Wetlands | **3** | 3 | **1** | **1** |

[1]Seral stage percentage classes: 1: 0-10%; 2: 11-35%; 3: 36-65%; 4: 66-84%; 5: ≥85%; **bolded** numbers indicate representation does not meet a target (i.e. early representation is greater than the target or late+climax or climax representation is less than the target.)

Fraser North Range Unit is generally in moderate condition, although many variations occur within this large unit. Differences in condition generally reflect the proximity to roads and water.

Most of the Lower Grasslands in the unit occur on the large sage and grass dominated terraces above the Fraser River. These terraces are a mosaic of early and mid seral condition. The small

isolated benches that occur along the steep slopes leading down to the Fraser are also in early seral condition primarily due to concentrated use by California bighorn sheep.

Areas that meet the late seral and climax targets include the grasslands between Coal Pit Pasture and the Empire Valley Road, isolated areas surrounded by steeper slopes, and most steep slopes (including both north facing slopes and sparsely vegetated slopes).

The broken terrain around Onion Lake contains most of the riparian areas, moist depressions and swales in this Range Unit. These are also the only significant riparian areas in the Lower Grasslands. Most of these riparian areas are generally weedy and the structure and composition of the shrubby areas has been significantly altered by cattle use. The grass-dominated swales are also very weedy and are in early seral stages. The shrubby basins in the Onion Lake area are generally in mid- to early seral condition, while the basins located between the Empire Valley Road and the Fraser River are generally in late and climax condition.

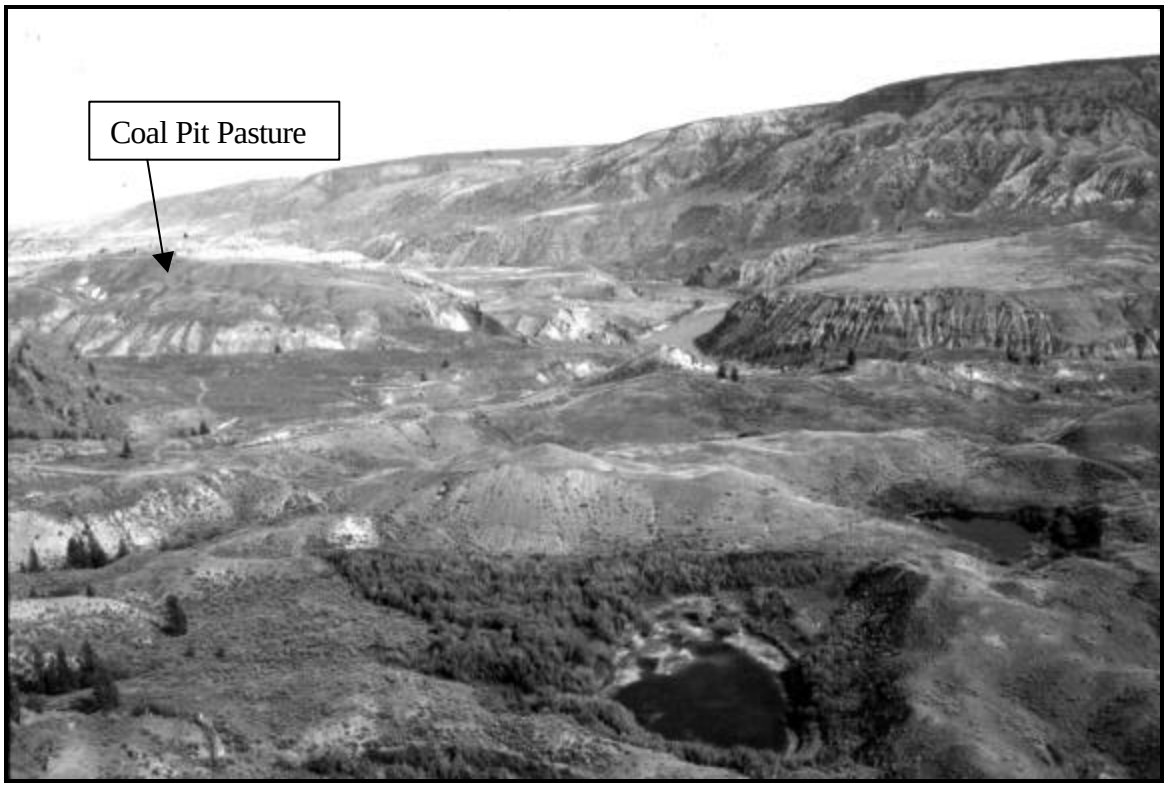



Photo by Chris Hamilton

**Photo Four. Looking northeast across the Lower Grasslands of the Fraser North Range Unit. Note Onion Lakes in the foreground, Iron Gate Road in the midground and the Coal Pit Pasture is the background.**

Within the Middle Grasslands, most gentle to moderate sloping areas are well below meeting seral stage targets. The Dry Lake area, which was seeded with crested wheatgrass in the early

1990's, is in very early condition, although the center of the bulrush marsh at Dry Lake is mostly late seral condition (areas of early and mid seral condition can be found along the foreshore).

The remaining Principal Ecosystem Units in the unit are a mosaic of mid and early seral stages. Exceptions include Airport Flats and the east-facing slopes of Clyde Mountain, which have areas of late seral and climax condition. Most steep slopes (warm and cool) are lightly used and tend to be in late and climax seral stages.

Photo by Chris Hamilton

**Photo Five. The Middle Grasslands of the 'Eagle Tree' area of the Fraser North Range Unit.**

The majority of moist, grass dominated swales are estimated to be in early seral condition and are dominated by weeds, however several swales in the area between the Iron Gate Road and the bottom of Dry Lake are mid-seral.

A number of important moist shrub-dominated swales can be found just north of Clyde Mountain and are mostly in early seral condition. Weedy species such as Kentucky bluegrass will likely remain as components of these ecosystems, however, there is a need to manage these sites to allow the recovery of native grasses, forbs and shrubs.

A number of small marshes are located in this Range Unit. They are heavily used by livestock and are also extremely important for wildlife. Most of these marshes are in mid seral condition,

although the wet meadow fringes are generally in early to mid condition. Cockleburr is a problem in the marshes below the Calving Barn.

The Upper Grasslands start at higher elevations than they are currently mapped. This area is almost exclusively forested. The few areas of grasslands are mostly in mid seral stages.

***Management Issues***

Swales and gentle and moderate slopes in the Lower Grasslands fall well short of seral stage targets. The riparian areas associated with Onion Lake are also serious concern. Within the Middle Grasslands, most shrub dominated swales, the Dry Lake area, marshes, and gentle and moderate slopes also fall short of meeting seral stage targets. Knapweed on Airport Flats, cockleburr in the marshes below the calving barn and leafy spurge in Coal Pit Spring are management issues to be addressed.

## Strategies - Fraser North Range Unit

- Establish an upward trend in the early and mid-seral stage gentle and moderate slopes of the Middle and Lower grasslands.
- Establish an upward trend in the swales in the Onion Lake area and north of Clyde Mountain.
- Establish photo-monitoring points at important riparian areas
- Fence Onion Lake to restore riparian area and minimize the spread of weeds while providing access to water for livestock
- Ensure habitat associated with aspen groves, riparian draws, and shrub dominated swales has relatively little use by domestic livestock.
- Control weed species - consider using chemicals for spot applications

## Coal Pit Pasture

***Physical Description of Unit***

Coal Pit Pasture is a relatively small area of Lower Grasslands adjacent to Churn Creek and immediately west of the Fraser River. The terrain includes a small basin, bordered by hills on one side and by steep, eroded slopes leading down to Churn Creek on the other. Sagebrush vegetation blankets the low elevations of the basin while grass communities cover the gentle to steep slopes at middle to higher elevations of the basin. Small stands of trees are present on steep north-facing slopes. On the flats and gentle slopes at lowest elevations of the basin, soils are often very gravelly or cobbly. On the moderate to steep side slopes, the soils are typically finer. The eroded terrain leading down to Churn Creek has a mixture of sagebrush and grass vegetation on relatively stable, moderate slopes and little or no vegetation on steep, actively eroding slopes.

### *Historic Domestic Livestock Use*

This pasture has historically been grazed in spring.

### *Wildlife Use*

- Important bighorn sheep winter range as well as an important bighorn sheep lambing area which occurs along lower Churn Creek near Dry Lake Pasture.
- A moderate level of mule deer activity in spring during green-up.

### *Current Condition of Principal Ecosystems in Unit*

**Current Seral Condition of Principal Ecosystem Units in the Coal Pit Range Unit**

| Principal Ecosystem Unit | Seral Stage Representation[1] | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Middle Grasslands | | | | |
| Gentle slopes and terraces –sage dominated | **3** | 3 | **2** | **0** |
| Moderate to steep slopes – sage dominated | 1 | 1 | 5 | 3 |
| Gentle to moderate slopes and terraces – grass dominated | **2** | 4 | **1** | **0** |
| Steep cool slopes - grass dominated | 0 | 1 | 5 | 4 |
| Moist depressions and swales | **2** | 4 | **0** | **0** |
| Talus | 0 | 0 | 5 | 5 |
| Streamside riparian | **2** | 3 | **3** | 2 |
| Steep slopes – sparsely vegetated | 1 | 1 | 5 | 4 |

[1]Seral stage percentage classes: 1: 0-10%; 2: 11-35%; 3: 36-65%; 4: 66-84%; 5: ≥85%; **bolded** numbers indicate representation does not meet a target (i.e. early representation is greater than the target or late+climax or climax representation is less than the target.)

Coal Pit pasture is generally in poor condition since historically it has received heavy spring use by livestock. Heaviest use has been on the gentle slopes with sagebrush vegetation in the bottom of the small basin. Little late seral and no climax vegetation remains on these slopes. Surface erosion due to running water has also impacted the vegetation. Livestock have also heavily impacted a small moist depression with grass and sedge vegetation in the bottom of the basin. The gentle to moderate slopes dominated by grass above the bottom of the basin have been heavily utilized by livestock and the climax grasses have been replaced by needle grass. Lichen communities are poorly developed.

In contrast to the gentle slopes, the moderate and steeper slopes dominated by sagebrush have been only lightly impacted. Bluebunch wheatgrass and lichens are abundant beneath the sagebrush. The steep cool slopes dominated by grass vegetation have also been only lightly

affected by livestock and have a vigorous cover of bluebunch wheatgrass and lichens. Wildlife use has apparently had little impact.

Riparian vegetation, dominated by tall and mid shrubs, borders the incised ephemeral stream that drains the basin. Gentle slopes adjacent to the stream channel have been moderately to heavily impacted by livestock use but steeper slopes are less affected.

The steep, sparsely vegetated slopes leading down to Churn Creek have not been impacted by livestock and are only lightly impacted by wildlife, primarily sheep.

Leafy spurge is locally present in the moist ravine (Dead Cow Gulch) draining the basin.

### *Management Issues*

Several seral stage issues are present in this pasture. The gentle slopes dominated by sagebrush on the floor of the basin have been heavily disturbed by livestock and are well short of seral stage targets. Similarly the gentle slopes dominated by grass are well short of targets.

## Strategies - Coal Pit Pasture

- Establish an upward trend in sagebrush and grass dominated ecosystems on gentle slopes of the basin.
- Establish an upward trend in the moist swales and the streamside riparian ecosystems.
- Control weed species - consider using chemicals for spot applications

## Clyde Mountain Range Unit

### *Physical Description of Unit*

The Clyde Mountain Range Unit occurs on the upper elevations of Clyde Mountain and consists of a gently sloping plateau and the upper slopes immediately below the plateau. The Range Unit consists almost entirely of Upper Grasslands with small amounts of Middle Grasslands along its southern flank. Cool aspect slopes are mostly vegetated by Douglas-fir forests, many of which have been previously selectively harvested. Small aspen forests occur primarily in broad depressions on the plateau.

### *Historic Domestic Livestock Use*

Due to limited stock watering sources, this relatively small Range Unit has traditionally received only light dormant season cattle grazing and all-season grazing by few horses.

### *Wildlife Use*

- Bighorn sheep winter range along the Fraser River east of Clyde Mtn.
- Moderate use by mule deer as spring range
- Moderate use of Douglas-fir forests on east-facing slopes as winter range

### *Current Seral Condition of Principal Ecosystem Units*

**Current Seral Condition of Principal Ecosystem Units in the Clyde Mountain Range Unit**

| Principal Ecosystem Units | Seral Stage Representation[1] | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Middle Grasslands | | | | |
| Steep warm slopes | 1 | 1 | 5 | 3 |
| Upper Grasslands | | | | |
| Gentle to moderate slopes and terraces | 1 | 2 | 5 | 2 |
| Moist depressions and swales | 1 | 4 | **2** | **0** |
| Aspen copses (uncommon) | **2** | 4 | **1** | **1** |

[1]Seral stage percentage classes: 1: 0-10%; 2: 11-35%; 3: 36-65%; 4: 66-84%; 5: ≥85%; **bolded** numbers indicate representation does not meet a target (i.e. early representation is greater than the target or late+climax or climax representation is less than the target.)

The northern two-thirds of the plateau portion of this range has traditionally had greater livestock use than the southern third and as a consequence has less area in late seral and climax vegetation. The northern portion of the unit includes several small depressions and swales, some of which would have water in them briefly early in the growing season of some years. Parts of this Range Unit appear to have been seeded with crested wheatgrass and remnant patches remain.

Large, well-developed mushroom (fairy) rings are common in this Range Unit. The southern third of Clyde Mountain Range Unit does not appear to have any nearby water sources for domestic livestock and is separated from the rest of the unit by a fence. As a consequence it has significant areas of late seral and smaller areas of climax Upper Grassland ecosystems. The upper warm aspect slopes at the southern end of the Range Unit are primarily late seral and climax Middle Grasslands that appear to receive little use by either domestic livestock or native ungulates.

### Management Issues

This Range Unit includes a large Benchmark Area encompassing much of the area from the plateau to the Fraser River. Details can be found in *Section 7.0 - Benchmark Areas*. Forest encroachment is occurring in small, localized areas along the north-eastern edge of the unit. Weeds are not a concern over most of the unit and occur principally in moist depressions and along roads. Moist depressions is the principal ecosystem unit that fails to meet seral stage distribution targets.

## Strategies - Clyde Mountain Range Unit

- Maintain an upward trend in seral stage of plateau grasslands of the Range Unit.
- Establish an upward trend of moist depressions and swales.

### Specialty Pastures (Alkali, BC, Maytag, Lease, Dry Farm, and Holding)

***Physical Description of Unit***

The Specialty Pastures (Alkali Flats, Maytag, B.C., Lease, Dry Farm, and the Holding Pastures) were the deeded, fenced pastures of the Empire Valley Ranch. Due to their historic use, they have been grouped together for this plan. The pastures are located in the Koster Creek and Grinder Creek area, to the west of Empire Valley. The area is primarily Upper Grassland, with minor areas of Middle Grasslands at the eastern edge.

Photo by Chris Hamilton

**Photo Six: A perfectly straight row of Douglas-fir trees has grown on the site of an old fence in Dry Farm Pasture. The fence trapped snow, which may have provided enough moisture to help young seedlings become established.**

The terrain is primarily on a south to southeast macro slope, with Grinder and Koster Creeks creating two large gullies running west to east. The grassland benches have minor amounts of incised gullies. Most of the sub-pastures are primarily grassland with significant amounts of

timber scattered throughout. Except for Grinder and Koster Creeks, there are relatively few riparian areas.

***Historic Domestic Livestock Use***

Unlike the majority of the Protected Area, these pastures did not have components of Crown Land fenced in with private land and thus, were managed solely by the landowner. These pastures were used for grazing the cattle over and above the amounts authorized in range tenures. During the 1970's Empire Valley Ranch ran 1750 cattle while their Ministry of Forests permit was for 1300 head. The extra 450 cattle were grazed on the Specialty Pastures during the entire grazing season. These pastures were also used to breed separate herds of cows aside from the main herd (i.e. heifers).

Around the turn of the century Dry Farm was planted to wheat to supply the flourmill on Koster Creek. Evidence of this intensive agriculture is still evident in the grasslands today. Several small areas on Dry Farm were also planted to crested wheatgrass in the 1970's.

In general, these pastures have had continuous grazing throughout the season and show significant impacts from domestic livestock.

***Wildlife Use***

- These pastures receive moderate to heavy deer use during the spring green-up period, light in the summer and moderate in the fall.
- Potential for mule deer winter range values associated with Douglas-fir forest habitats.
- Bighorn sheep activity is low.
- Lakes and wetlands have significant value for breeding migratory waterfowl.

***Current Seral Condition of Principal Ecosystem Units***

For the purposes of assessing current seral condition, each sub-pasture will be addressed separately.

***a) Alkali Flats Pasture***

**Current Seral Condition of Principal Ecosystem Units in the Alkali Flats Pasture**

| Principal Ecosystem Units | Seral Stage Representation[1] | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Upper Grasslands | | | | |
| Gentle to moderate slopes and terraces | **5** | 2 | **0** | **0** |
| Moist depressions and swales | 0 | 4 | **3** | **0** |
| Lakeshore Riparian and Wetlands | 1 | 2 | 5 | 3 |

[1]Seral stage percentage classes: 1: 0-10%; 2: 11-35%; 3: 36-65%; 4: 66-84%; 5: ≥85%; **bolded** numbers indicate representation does not meet a target (i.e. early representation is greater than the target or late+climax or climax representation is less than the target.)

Alkali Flats Pasture is approximately 70% forest, with the remaining 30% comprised of mostly gentle slopes and terraces. Moist depressions and swales comprise less than 1% of the unit.

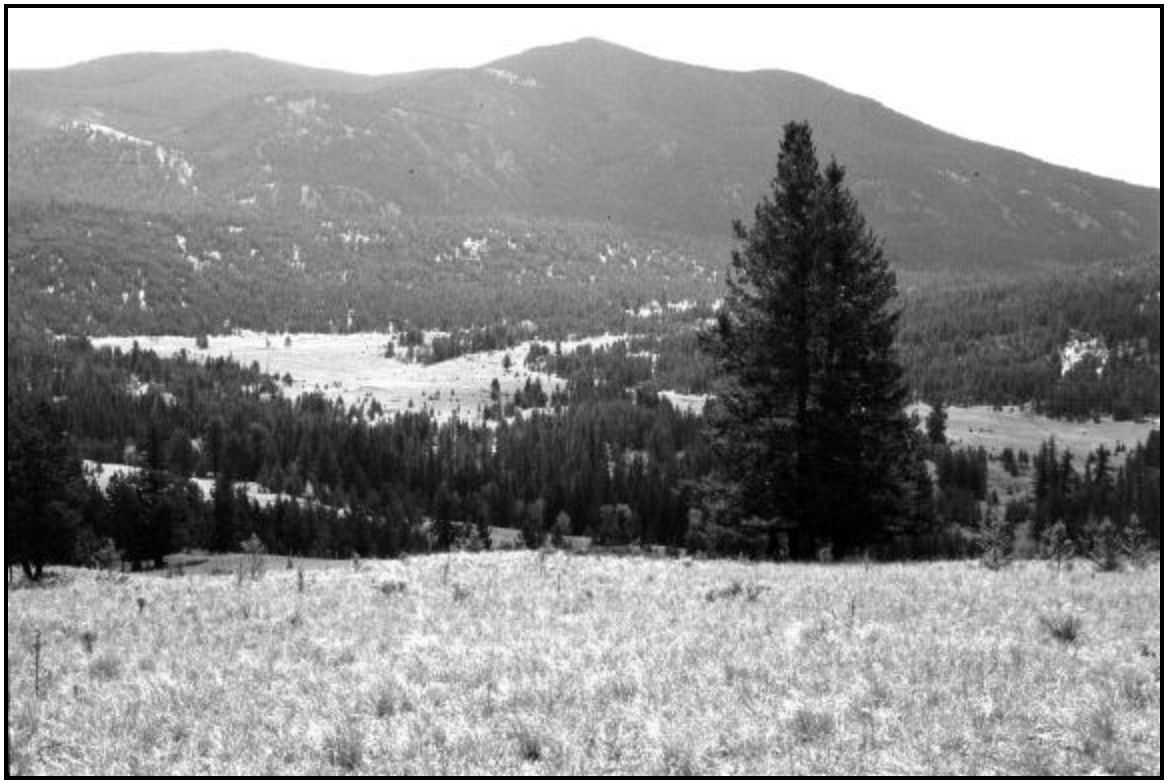


Photo by Chris Hamilton

***Photo Seven: Looking southwest at the Upper Grasslands of Alkali Flats Pasture.***

***b) Holding Pasture***

**Current Seral Condition of Principal Ecosystem Units in the Holding Pasture**

| Principal Ecosystem Units | Seral Stage Representation | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Upper Grasslands | | | | |
| Gentle to moderate slopes and terraces | **5** | 2 | **1** | **0** |
| Moist depressions and swales | 0 | 4 | **3** | **0** |
| Steep warm, slopes | 1 | 1 | 5 | 2 |

[1]Seral stage percentage classes: 1: 0-10%; 2: 11-35%; 3: 36-65%; 4: 66-84%; 5: ≥85%; **bolded** numbers indicate representation does not meet a target (i.e. early representation is greater than the target or late+climax or climax representation is less than the target.)

There are several small grassland openings at the north end of Holding Pasture that have historically received only moderate grazing pressure; as a result, these areas are in mid to late seral condition.

***c) Dry Farm Pasture***

**Current Seral Condition of Principal Ecosystem Units in the Dry Farm Pasture**

| Principal Ecosystem Units | Seral Stage Representation[1] | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Upper Grasslands | | | | |
| Gentle to moderate slopes and terraces | **3** | 3 | **2** | **1** |
| Moist depressions and swales | **4** | 3 | **0** | **0** |
| Lakeshore Riparian and Wetlands | **5** | 1 | **1** | **0** |
| Steep warm slopes | **5** | 1 | **1** | **1** |
| Steep cool slopes | **2** | 1 | **3** | **1** |
| Streamside riparian | **5** | 1 | **0** | **0** |
| Talus | 1 | 1 | 5 | 5 |
| Aspen copses | **5** | 1 | **1** | **0** |
| Middle Grasslands | | | | |
| Gentle to moderate slopes and terraces | **2** | 3 | **3** | **1** |
| Steep cool slopes | **2** | 1 | **4** | **1** |

[1]Seral stage percentage classes: 1: 0-10%; 2: 11-35%; 3: 36-65%; 4: 66-84%; 5: ≥85%; **bolded** numbers indicate representation does not meet a target (i.e. early representation is greater than the target or late+climax or climax representation is less than the target).

The entire Dry Farm Pasture is a mosaic of early, mid and late seral grasslands. Water is lacking within this pasture and the seral stage is dependent on the distance from water. The old wheat field is in mid and late seral stage and is recovering rapidly due to its distance from water. The steep sidehill north of Grinder Creek is heavily terraced and is in early condition. This is primarily due to Grinder Creek being the only water source near the end of the grazing season.

There are several springs and ephemeral streams with associated riparian areas in the Dry Farm pasture. These areas are in early seral stage.

Hounds-tongue is spread throughout this pasture on the old roads. There is a small patch of knapweed adjacent to the north boundary fence.

### *d) Lease Pasture*

**Current Seral Condition of Principal Ecosystem Units in the Lease Pasture**

| Principal Ecosystem Units | Seral Stage Representation[1] | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Middle Grasslands | | | | |
| Gentle to moderate slopes and terraces | **4** | 2 | **2** | **0** |
| Moist depressions and swales | **5** | 1 | **1** | **0** |
| Streamside riparian | **5** | 1 | **1** | **0** |
| Lakeshore riparian and wetlands | **2** | 2 | **4** | **1** |
| Steep cool slopes | 1 | 1 | 5 | **1** |

[1]Seral stage percentage classes: 1: 0-10%; 2: 11-35%; 3: 36-65%; 4: 66-84%; 5: ≥85%; **bolded** numbers indicate representation does not meet a target (i.e. early representation is greater than the target or late+climax or climax representation is less than the target.)

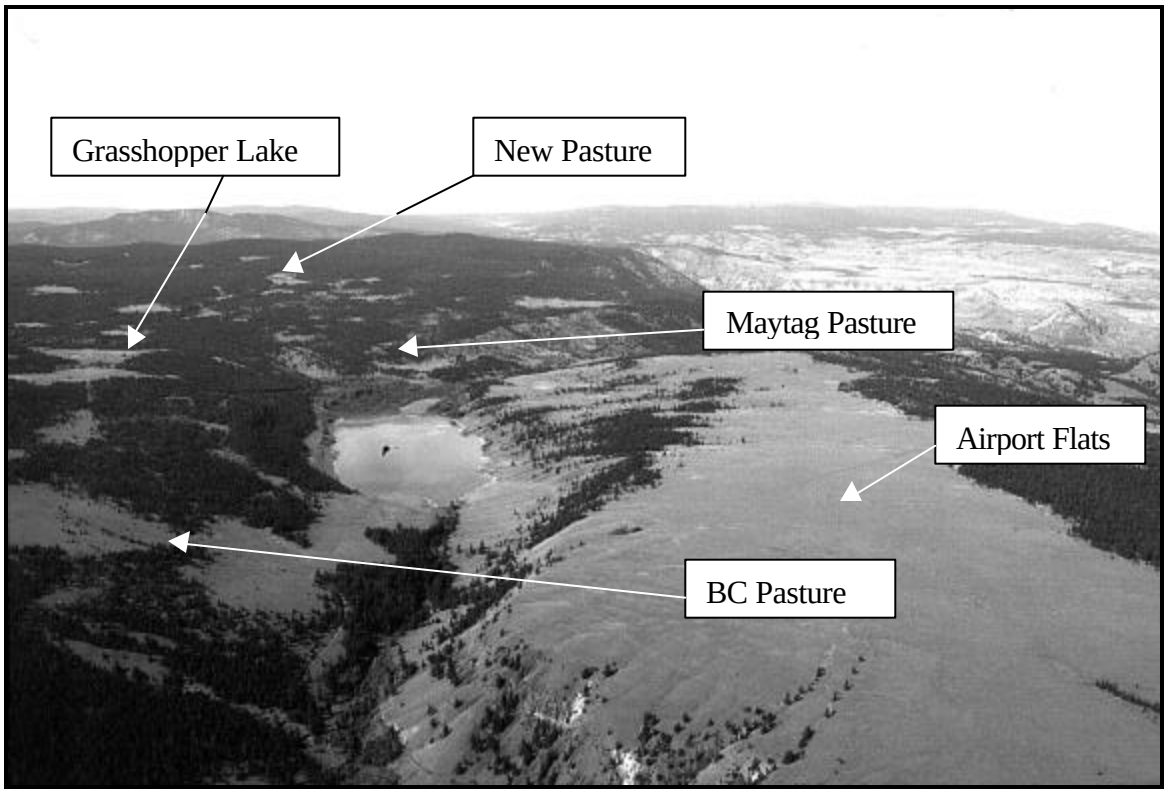



Photo by Chris Hamilton

**Photo Eight: Looking northwest at BC Lake, BC Pasture and Airport Flats. The branding corrals at Grasshopper Lake are visible in the extreme left of the photograph. The small Upper Grassland openings of New Pasture and Maytag Pasture can be seen in the background.**

Lease Pasture is a small area located at the start of the Blackdome Road, including the southwest shore of Brown Lake. Away from the road and spring, the pasture is in mid and late seral condition. The shore of Brown Lake is in mid and late seral condition, primarily due to the steepness of the slope dropping into the lake.

### *e) BC Pasture*

**Current Seral Condition of Principal Ecosystem Units in the BC Pasture**

| Principal Ecosystem Units | Seral Stage Representation[1] | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Upper Grasslands | | | | |
| Gentle to moderate slopes and terraces | **5** | 2 | **1** | **0** |
| Moist Depressions and Swales | **5** | 2 | **1** | **0** |
| Middle Grasslands | | | | |
| Gentle to moderate slopes and terraces | **5** | 1 | **1** | **0** |
| Steep Cool Slopes | 1 | 1 | 5 | 2 |
| Lakeshore Riparian and Wetlands [1] | **5** | 1 | **1** | **0** |

[1]Seral stage percentage classes: 1: 0-10%; 2: 11-35%; 3: 36-65%; 4: 66-84%; 5: ≥85%; **bolded** numbers indicate representation does not meet a target (i.e. early representation is greater than the target or late+climax or climax representation is less than the target.)

The majority of BC Pasture is in early seral condition. The only site that has not been heavily utilized by cattle is the steep west facing aspect east of Koster Creek.

Grasshopper Lake is a small kettle lake located on the upper plateau of the unit. This small lake is fenced and is currently used as a holding area. Given the historic use of the area, Grasshopper Lake will be maintained as a holding area.

### *f) Maytag Pasture*

**Current Seral Condition of Principal Ecosystem Units in the Maytag Pasture**

| Principal Ecosystem Units | Seral Stage Representation[1] | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Upper Grasslands | | | | |
| Gentle to moderate slopes and terraces | **5** | 2 | **1** | **0** |

[1]Seral stage percentage classes: 1: 0-10%; 2: 11-35%; 3: 36-65%; 4: 66-84%; 5: ≥85%; **bolded** numbers indicate representation does not meet a target (i.e. early representation is greater than the target or late+climax or climax representation is less than the target.)

Maytag Pasture is located north of BC Lake consisting primarily of selectively logged forest. There are several small grassland openings scattered throughout the pasture. These small grasslands are primarily south-facing Upper Grasslands in early seral condition (~25% of the PNC community)

***Management Issues***

The Specialty Pastures are primarily in early seral condition. Grazing management should concentrate on an upward trend throughout the pastures. Encroachment and in-growth in Dry Farm Pasture are the only other significant issues.

## Strategies - Specialty Pastures

- Establish an upward trend in the early and mid seral stages.
- Restore/improve riparian habitat
- Establish photo-monitoring points at riparian areas
- Maintain Grasshopper Lake as a holding area.
- Restore high priority encroached grasslands in the IDFxm
- Establish exclosures to monitor recovery
- Control weed species - consider using chemicals for spot applications

### New Pasture

***Physical Description of Unit***

New Pasture is a large area located north of Koster Creek and west of Maytag Pasture. Koster Creek is fenced off from the New Pasture unit and is located in a Range Unit outside the Protected Area. New Pasture, which is comprised completely of Upper Grassland, is a mix of 70% forest and 30% grassland openings. The unit is on a southeast facing macro slope with several small hills on the western edge.

***Historic Domestic Livestock Use***

Historically this pasture has been used as a yearling pasture (primarily steers) and was grazed from May to August. The cattle use was generally concentrated around the few watering sites (i.e. Koster Creek water access), most of which dried up by the end of the season. The utilization on the sidehills adjacent to Koster Creek was excessive, as it provided a year round water source.

### *Current Seral Condition of Principal Ecosystem Units*

**Current Seral Condition of Principal Ecosystem Units in New Pasture**

| Principal Ecosystem Units | Seral Stage Representation[1] | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Upper Grasslands | | | | |
| Gentle to moderate slopes and terraces | **2** | 5 | **1** | **0** |
| Warm steep slopes | **5** | 1 | **0** | **0** |

[1]Seral stage percentage classes: 1: 0-10%; 2: 11-35%; 3: 36-65%; 4: 66-84%; 5: ≥85%; **bolded** numbers indicate representation does not meet a target (i.e. early representation is greater than the target or late+climax or climax representation is less than the target.)

Due to its historic use patterns, New Pasture is primarily in the early part of the mid seral stage (~30% of PNC). Kentucky bluegrass has invaded many of the grassland openings, but is located mainly in localized patches.

The area adjacent to the Koster Creek water access is in very early seral stage. Many areas have weedy invaders and there has been much erosion in the past.

### *Management Issues*

Kentucky bluegrass has invaded this pasture and now must be included as the PNC. Forest encroachment and in-growth are a significant management issue in this area although this needs to be balanced with the need to maintain mule deer winter range values.

## Strategies - New Pasture

- Establish an upward trend in the early and mid seral stages.
- Distribute livestock use away from grasslands adjacent to Koster Creek
- Restore high priority encroached grasslands in the IDFxm
- Control weed species - consider using chemicals for spot applications

## Gooseberry Range Unit

### *Physical Description of Unit*

The Gooseberry Range Unit is located on the south side of Churn Creek in the northwestern leg of the Protected Area, west of Little Churn Creek. Grasslands are most extensive in the northeast portion of the unit, near Little Churn Creek. Both Middle and Upper Grassland ecosystems are present. A relatively large proportion of this unit is forested.

Grasslands of the Gooseberry Range Unit occur primarily on gentle to moderately steep northwest facing slopes. Level terraces and flats, smaller than those east of Little Churn Creek,

occur above the Churn Creek breaks. Below these flats, the terrain falls steeply to Churn Creek. Behind the flats, moderate to steep slopes rise to the forest edge. These slopes are interrupted by small knolls and steep-sided ravines. Upper grasslands, near the forest edge, occur primarily on steep slopes. A relatively wide, shallow valley with complex erosional, depositional, bedrock, and slump features extends up-slope from Churn Creek. A small lake occurs on this complex terrain. Steep north- and east-facing slopes within the grasslands in this unit are frequently forested.

### *Historic Domestic Livestock Use*

The area has traditionally been grazed in early spring and late fall.

### *Wildlife Use*

- Along with Churn Flats, this area is a bighorn sheep winter range for a migratory sheep population which summers on Yalakom Mountain.
- Most of Gooseberry is classified as mule deer winter range (MDWR) and is heavily used by deer in spring and fall.

### *Current Condition of Principal Ecosystem Units*

**Current Seral Condition of Principal Ecosystem Units in the Gooseberry Range Unit**

| Principal Ecosystem Units | Seral Stage Representation[1] | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Middle Grasslands | | | | |
| Gentle to moderate slopes and terraces | 1 | 2 | **4** | 2 |
| Steep cool slopes | 1 | 2 | 5 | 3 |
| Moist depressions and swales | **3** | 3 | **2** | **0** |
| Streamside riparian | **2** | 1 | **4** | 3 |
| Upper Grasslands | | | | |
| Gentle to moderate slopes and terraces | 1 | 2 | 5 | 2 |
| Steep cool slopes | 1 | 2 | 5 | 4 |

[1]Seral stage percentage classes: 1: 0-10%; 2: 11-35%; 3: 36-65%; 4: 66-84%; 5: ≥85%; **bolded** numbers indicate representation does not meet a target (i.e. early representation is greater than the target or late+climax or climax representation is less than the target.)

Ecosystems of the Gooseberry Range Unit are heavily used by bighorn sheep and mule deer. Along with livestock, they have extensively, but not heavily, impacted the grasslands on terraces and adjacent steeper slopes within the Middle Grasslands. As a result, the unit has a predominance of late seral vegetation and relatively little climax or early seral vegetation. Livestock use has locally been heavy, especially in moist depressions and swales, which are

infrequent in the area. In general, however, livestock impact has been less than in many other parts of the Protected Area.

Vegetation condition on the gentle slopes and terraces is predominantly late seral. Impacts of wildlife and livestock are reflected primarily in a reduced cover and vigor of lichens compared to climax ecosystems.

Steep cool slopes have been lightly to moderately impacted by wildlife and livestock use. Below the Churn Creek breaks, impacts from livestock have been light and the vegetation is primarily late seral and climax. At higher elevations, above the main flats, however, impacts of livestock have been heavier, especially along main trails.

Streamside riparian ecosystems occur along Little Churn and Churn creeks and a small ephemeral stream southwest of Little Churn Creek. Little Churn Creek is within a deeply incised forested valley with limited livestock access. Impacts of livestock on the forest vegetation are most evident along the main trail crossing the valley. Very little water is normally present in Little Churn Creek.

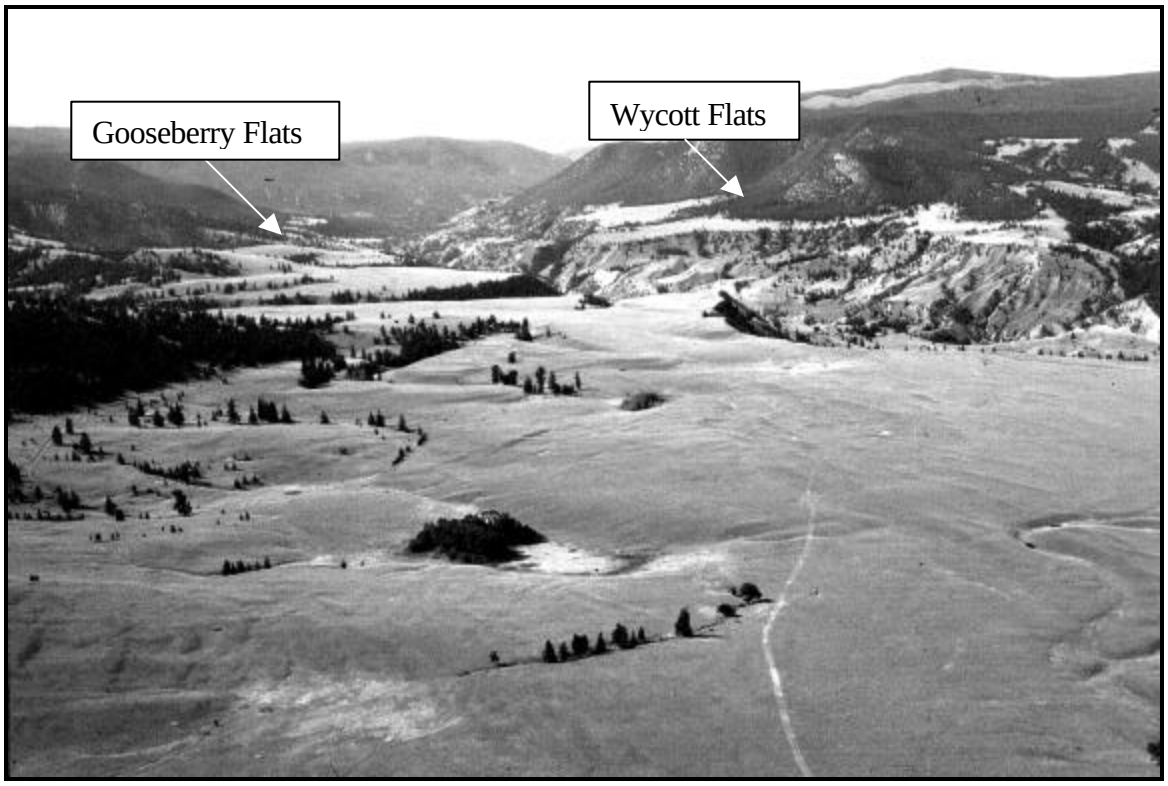



Photo by Chris Hamilton

**Photo Ten: Looking west across Churn Flats. Gooseberry Flats are visible in the top left of the photo while Gang Ranch's private land on Wycott Flats is visible to the right.**

The Upper Grasslands in this Range Unit have been less affected by livestock use than have the Middle Grassland. They are well above the main terraces, primarily on moderate to steep

slopes. Gentle slopes have received greater use than steeper slopes but the grasslands on both ecosystems are primarily late seral and climax.

### *Management Issues*

Seral stage targets are nearly met at the present time in this unit. However, there is insufficient late + climax seral stage representation on the flats and moderate slopes of the Middle Grasslands. This deficit is due to heavy wildlife use as well as past livestock grazing. Livestock and wildlife have significantly impacted small stream riparian and other moist ecosystems west of Little Churn Creek.

## Strategies - Gooseberry Range Unit

- Maintain an upward trend in seral stage on the gentle slopes and terraces of the Middle Grasslands
- Continue to meet seral stage objectives in the Upper grasslands.
- Establish upward trend in seral stage of riparian habitats west of Little Churn Creek.
- Establish photo-monitoring points at riparian areas
- Maintain suitable habitat for wildlife associated with aspen thickets
- Provide adequate carryover forage for bighorn sheep
- Prevent impacts on the integrity of the bighorn sheep migration corridor

## Wycott Range Unit

### *Physical Description of the Unit*

The Wycott Range Unit is located in the northwest corner of the Protected Area north of Churn Creek. Grasslands are restricted to some southern aspects and level benches with approximately 75-80 percent of the area being forested. Both Middle and Upper Grasslands are present in the unit. Middle Grasslands occur on lower elevation sites adjacent to Churn Creek.

BC Parks Photo

**Photo Eleven: Blackwater Lake in the Wycott Range Unit.**

Terrain in the Wycott Range Unit is dominated by steep to moderate rolling hills at the northern boundary of the Protected Area. Scattered Upper Grasslands occur on moderate south aspect sites. Level terraces and flats at lower elevations contain significantly more grassland types. The sparsely vegetated clay Churn Creek breaks are located below these terraces. Western portions of the unit are dominated by steep rocky terrain which slopes directly into Churn Creek. Sheep Flats is the most westerly grassland terrace in the Protected Area. All terrain west of Sheep Flats is very steep rock bluff terrain.

Blackwater Lake, Goose Lakes and several smaller unnamed lakes are the main riparian areas in the Upper Grasslands. Several slump terrain sites are found adjacent to Churn Creek.

*Note: A large block of grassland in the unit is deeded to Gang Ranch and is not described or included in any seral stage comments.*

### *Historic Domestic Livestock Use*

The Wycott area has been grazed for well over 100 years and was the ranch headquarters for a small ranch (Wycott Ranch) until purchased by Gang Ranch in the early 1900s. More recently, the area has been used as early spring range. The Goose Lakes and Sheep Flats portion of the unit was a spring turnout for Sky Ranch at Big Creek. The old Sky Ranch turnout near Goose Lakes was acquired by Gang Ranch in the 1960s and the division fence was finally removed in

the late 1980s. For the last 25 years, Gang Ranch normally used the area as a yearling turnout pasture, but some year long use occurred from cattle drifting into the area from adjacent range areas. Recent livestock control has resulted in a more clearly defined spring use period.

Table Mountain at the east end of the Wycott Unit is used as a winter horse pasture.

### *Wildlife Use*

Wycott Flats, Sheep Flats and the adjacent escape terrain are critical habitat for migratory bighorn sheep that summer on Red Mountain. Mature Douglas-fir forests are critical mule deer winter range and adjacent grasslands are important for early spring mule deer habitat. Big horn sheep lambing areas occur above Sheep Flats and further upstream on the steep terrain above Churn Creek.

### *Current Condition of Principal Ecosystem Units*

**Current Seral Condition of Principal Ecosystem Units in the Wycott Range Unit**

| Principal Ecosystem Units | Seral Stage Representation[1] | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Middle Grasslands | | | | |
| Talus | 1 | 1 | 5 | 5 |
| Gentle to moderate slopes and terraces | 3 | 1 | **2** | 2 |
| Moist Depressions and Swales | 3 | 2 | **1** | 1 |
| Steep Cool Slopes | 1 | 1 | 5 | 4 |
| Steep Warm Slopes | 1 | 1 | **4** | 3 |
| Aspen Copses | 3 | 2 | **3** | 1 |
| Streamside Riparian | 3 | 3 | **2** | 1 |
| Upper Grasslands | | | | |
| Talus | 0 | 0 | 5 | 5 |
| Gentle to moderate slopes and terraces | 4 | 2 | 1 | 1 |
| Moist Depressions and Swales | 5 | 1 | 0 | 0 |
| Steep Cool Slopes | 1 | 4 | 2 | 0 |
| Steep Warm Slopes | 2 | 3 | 1 | 1 |
| Aspen Copses | 2 | 2 | 2 | 1 |
| Lakeshore Riparian and Wetlands | 3 | 2 | 2 | 1 |

[1]Seral stage percentage classes: 1: 0-10%; 2: 11-35%; 3: 36-65%; 4: 66-84%; 5: ≥85%; **bolded** numbers indicate representation does not meet a target (i.e. early representation is greater than the target or late+climax or climax representation is less than the target.)

Seral stage targets are not being met on most ecosystems in the Middle Grasslands of the Wycott Range Unit. Livestock use has heavily impacted most gentle slopes and terraces near water sources. Steep warm slopes are below seral stage targets due to California bighorn sheep use. Aspen copses, riparian areas and moist depressions have all been adversely impacted by livestock use.

The Upper Grasslands of the Wycott Range Unit are generally in early seral condition particularly from Blackwater Lake to Lower Goose Lake. These grassland/riparian complexes are particular concern.

### *Management Issues*

The Wycott Unit has been severely impacted by domestic livestock grazing. Upper Grasslands have been impacted to a greater degree than Middle Grasslands. Knapweed is present on the road from the range exclosure to the placer tenures on Churn Creek. Portions of the road below the range exclosure are deeply eroded by run-off along the rough road.

In the early 1970s, the Wildlife Branch purchased the private lot at Sheep Flats to more effectively manage California bighorn sheep and mule deer use. At that time a "no-grazing" regime was put in place to minimize conflict between sheep, deer and livestock on this very valuable sheep habitat area. The continued commitment to a no-grazing regime on Sheep Flats has been confirmed through this Management Plan.

## Strategies - Wycott Range Unit

- Establish an upward trend on all early and mid-seral stage grasslands impacted by domestic livestock.
- Establish photo-monitoring points at riparian areas
- Control weed species such as (knapweed) using chemicals for spot applications
- Restore enroached grassland areas around Blackwater Lake
- Domestic livestock will not be grazed on Sheep Flats.
- Prevent impacts on the integrity of the bighorn sheep migration corridor

## Gang Ranch Range Unit

### *Physical Description of Unit*

The Gang Ranch Range Unit is located north of Churn Creek and lies between the Fraser River and Table Mountain. The area is grazed in late winter and early spring and is used in conjunction with adjacent Gang Ranch deeded land. The area is primarily Lower Grasslands and contains no forests.

The majority of the area is made up of steep, sparsely vegetated, deeply incised south aspect terrain. Several small benches occur in the area as well as the gently rolling south aspect sites above the Churn Creek breaks. A small area of irrigated hayfield is located in the Protected Area. The level terrace east of the irrigated site was cultivated and seeded to crested wheat grass in the late 1970s.

### *Historic Domestic Livestock Use*

For the past 30-40 years, the area has been winter grazed with livestock removed before green up of the adjacent unfenced hayfields. Little or no grazing by livestock has occurred during the growing season. Livestock use is restricted to upper slopes and gently rolling terrain.

### *Wildlife Use*

The area is critical California bighorn sheep range. A population of bighorn sheep are year round residents and can often be seen grazing on irrigated alfalfa hayfields. Nearby steep claybanks and rugged terrain offers escape terrain and lambing areas.

### *Current Condition of Middle Grasslands by Principal Ecosystem Units*

**Current Seral Condition of Principal Ecosystem Units in the Gang Ranch Range Unit**

| Principal Ecosystem Units | Seral Stage Representation[1] | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Lower Grasslands | | | | |
| Gentle to moderate slopes and terraces | **2** | 2 | **4** | **1** |
| Moist Depressions and Swales | 1 | 2 | **4** | **1** |
| Steep Warm Slopes | 1 | 2 | 5 | 3 |
| Streamside Riparian | 1 | 1 | 5 | 2 |

[1]Seral stage percentage classes: 1: 0-10%; 2: 11-35%; 3: 36-65%; 4: 66-84%; 5: ≥85%; **bolded** numbers indicate representation does not meet a target (i.e. early representation is greater than the target or late+climax or climax representation is less than the target.)

The steep, sparsely vegetated terrain in the Gang Ranch Unit is a mosaic of mid, late and climax seral stages with only minor areas of early seral condition due to heavy use by California bighorn sheep. The grass dominated gentle slopes and terraces are believed to be in mid and late seral with the exception of the irrigated hayfield and crested wheatgrass plantation which are designated early seral.

### *Management Issues*

The irrigated alfalfa field in the Gang Ranch Unit will continue to be managed for production of hay and silage.

## Strategies

- Maintain current seral stage distribution of sites grazed by domestic livestock.

## Churn Flats Range Unit

### *Physical Description of Unit*

The Churn Flats Range Unit occurs on the south side of Churn Creek, downstream of Little Churn Creek. It includes the largest expanse of level grassland within the Churn Creek Protected Area. Most of the grasslands in this unit, including the flats and slopes down to Churn Creek, are part of the Middle Grasslands. Upper Grasslands occur well above the flats, adjacent to the forest edge and as openings within the forest.

A broad terrace ("Churn Flats"), blanketed by upland grassland vegetation, dominates the landscape of the Churn Flats Range Unit. Small moist depressions and swales dot the level to gently rolling landscape but occupy less than 5% of the grassland portion of the Range Unit. They contain moist meadow or wetland vegetation. Aspen copses occur locally in these

depressions at the base of steeper slopes. The generally level surface of the terrace is broken locally by broad, steep-sided ravines created by the ancient erosion of streams leading to Churn Creek. Although perennial streams are no longer present in these ravines, water flows during the snowmelt period and moist riparian vegetation is locally present. The north-facing slopes of the ravines are cooler and moister than are the south-facing slopes. Douglas-fir is common in the bottom and on the north-facing slopes of the ravines.

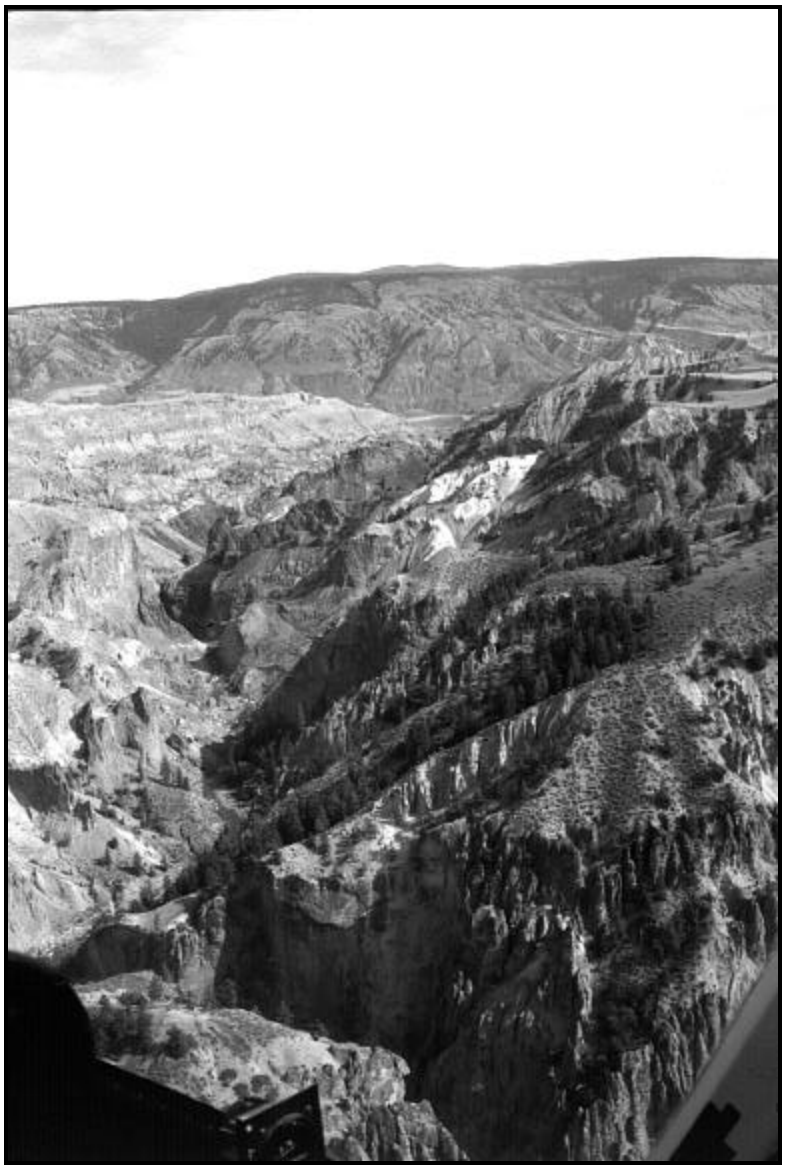


**Photo Twelve:**
**Churn Creek Gorge.**

Photo by Chris Hamilton

The northwestern edge of the terrace breaks very sharply onto steep slopes leading down to Churn Creek. Very large, ancient slope failures and slumps occur along this edge, producing a complex landscape termed “slump terrain”. This terrain consists of very steep headwall slopes above a complex terrain of low ridges and benches formed by accumulated material, followed again by steep slopes leading down to the creek.

Grasslands also occur at the base of the moderate to steep slopes leading up to the forested higher elevations on the south side of the large terrace. Small wet meadows, wetlands, and aspen forests occur locally at the toe of the slopes but their total extent is small. Two Cabin Lake, with its important riparian area, occurs here. A large bedrock knob near Two Cabin Lake has very steep grassy side-slopes and talus slopes.

### *Historic Domestic Livestock Use*

The Churn Flats Unit has historically been grazed in November and December, when sufficient snow is on the ground to make moisture available to cattle. The Upper Grassland component of the Range Unit has historically not been used because of the steeper terrain and the large amounts of forage available on the flats.

Churn Flats has been more heavily used in the past than it has been recently. As a result, the grassland shows signs of past heavier use but also clear signs of seral stage improvement. Grass species composition and cover has recovered more clearly than has lichen cover.

### *Current Condition of Principal Ecosystem Units*

**Current Seral Condition of Principal Ecosystem Units in the Churn Flats Range Unit**

| Principal Ecosystem Unit | Seral Stage Representation | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Middle Grasslands | | | | |
| Gentle to moderate slopes and terraces | 1 | 2 | **4** | **1** |
| Steep cool slopes | 0 | 1 | 5 | 4 |
| Steep warm slopes | 0 | 1 | 5 | 4 |
| Moist depressions and swales | **2** | 3 | **2** | 2 |
| Aspen copses | **3** | 3 | **2** | **1** |
| Lakeshore riparian and wetlands | **2** | 3 | **2** | **1** |
| Streamside riparian | 1 | 1 | 5 | 3 |
| Talus | 0 | 0 | 5 | 4 |
| Upper Grasslands | | | | |
| Gentle to moderate slopes and terraces | 0 | 1 | 5 | 2 |
| Steep cool slopes | 0 | 0 | 5 | 5 |

[1]Seral stage percentage classes: 1: 0-10%; 2: 11-35%; 3: 36-65%; 4: 66-84%; 5: ≥85%; **bolded** numbers indicate representation does not meet a target (i.e. early representation is greater than the target or late+climax or climax representation is less than the target).

### *Wildlife Use*

- Key winter range for migratory bighorn sheep which summer on Yalakom Mountain.
- The large knob adjacent to Two Cabin Lake and the grassland areas within 800 meters of the knob are extremely important sheep habitat because of its role as escape terrain on the large expanse of Churn Flats.
- Important mule deer winter range associated with Douglas-fir forests.

The large expanse of grassland that dominates the Churn Flats landscape is predominantly in mid and late seral condition. Although relatively little climax vegetation is present, observations suggest that the condition of these grasslands has improved in recent years and will likely continue to improve under the present management regime. Climax vegetation is most common on the west end of the large terrace and on the gentle slopes of the "slump" terrain, where there is little livestock use.

Photo by Chris Hamilton

**Photo Thirteen: Two Cabin Lake in the Churn Flats Range Unit. Note the rocky bluff in the lower left of the photograph. This bluff is important escape terrain for the herd of California bighorn sheep that winter on Churn Flats.**

Livestock have more heavily impacted the moist depressions and swales than they have the adjacent well drained sites on the flats, due possibly to the greater moisture availability in these depressions during November and December. A small number of moist depressions that are not easily accessed by livestock are in late seral and climax condition.

Steep slopes, both cool and warm, are generally in better seral condition than are the gentle slopes and flats. The steep cool slopes within the "slump" terrain below the large flat have climax vegetation. Above the large flat, steep cool slope ecosystems are predominantly late seral and climax.

Livestock use in the past has heavily impacted the aspen copses on the grasslands of Churn Flats. However, increased aspen regeneration suggests that current livestock use has a reduced impact on these ecosystems and that their seral condition is improving.

The riparian ecosystems and near-shore aquatic habitats of Two Cabin Lake have been heavily impacted by livestock. Most of the riparian area is in an early seral stage although a shrub-dominated riparian zone on the south side of the lake has been much less heavily impacted than the remainder of the lakeshore. The lake provides important wildlife habitat as well as a principal livestock watering source for Churn Flats.

Ecosystems of the Upper Grasslands generally meet seral stage targets.

### *Management Issues*

The large grassland terrace ("Churn Flats") in this Range Unit is the largest expanse of level grassland in the Protected Area, has relatively easy access, and is an important area for hunting. As a result, it has been impacted by an increasing network of roads. These roads bring in weeds, impact wildlife use patterns and have long-ranging impacts on the quality and productivity of the grasslands.

Livestock impacts to the lakeshore riparian vegetation at Two Cabin Lake have reduced important wildlife habitat values of the lake.

The Principal Ecosystem Units in this unit that do not meet seral stage targets are moist depressions and swales and aspen copses. The most extensive ecosystem (well-drained gentle slopes and terraces) nearly meets seral stage targets except for a small shortfall in the proportion of climax vegetation.

Forest encroachment is not a large concern, and there are only small, localized areas of weeds, such as blueweed, in moist areas and some other areas disturbed by past logging.

This Range Unit includes a large Benchmark Area, extending from the breaks of the large terrace down to Churn Creek on the western portion of the unit. A portion of the terrace, isolated from the remainder of the terrace by a wide ravine, is included within the Benchmark Area. Details can be found in *Section 7.0 – Benchmark Areas*.

Potential conflicts between domestic cattle grazing and California bighorn sheep winter ranges should be addressed through research.

## Strategies - Churn Flats Range Unit

- Maintain upward trend in seral condition of "Churn Flats" in order to fully meet seral stage targets.
- Establish upward trend in seral condition of moist depressions and swales and aspen copses in the Middle Grasslands.
- Fence the lakeshore of Two Cabin Lake in order to limit livestock access to the riparian zone and improve habitat values of the lakeshore. Maintain livestock access to water in or near Two Cabin Lake.
- Establish photo-monitoring points at riparian areas
- Explore restoring the water systems at Little Churn Creek and the range cabin east of Two Cabin Lake
- Provide adequate carryover forage for bighorn sheep

## Murdock Pasture

### *Physical Description of Unit*

The Murdock Pasture extends south from Lone Cabin Creek to the southern boundary of the Protected Area. It is bounded on the west by Lone Cabin Pasture and the east by Hartman Pasture. Most of Murdock is forested although grasslands occur along Lone Cabin Creek and as openings within the forest at higher elevations. Grasslands along Lone Cabin Creek are within the Middle Grasslands while those at higher elevations are within the Upper Grasslands.

The Middle Grasslands in this pasture occur primarily on moderate and steep slopes extending from the high elevation forested areas to the Lone Cabin Creek canyon. The slopes are generally north facing but broken by deep ravines leading to Lone Cabin Creek that have steep sided west- and east-facing slopes. Small benches occur locally at all elevations on the slopes. Large, old slope failures near Lone Cabin Creek have created "slump terrain", characterized by a steep headwall above complex topography formed by debris accumulations at the base of the failure.

The Upper Grasslands occur primarily near the forest/grassland boundary as openings within the forest. The topography is nearly level to gently rolling with locally steep slopes in areas of bedrock controlled terrain. Grasslands occur on relatively dry sites including south- and west-facing slopes and the upper slopes and summits of broad ridges.

### *Historic Domestic Livestock Use*

Historically, livestock use of this pasture has been relatively heavy, resulting in large areas of mid seral grasslands. Seral condition is generally well below targets but evidence for an improving trend is present, especially on moderate and steep slopes. Large numbers (thousands) of domestic sheep used this area between the 1930's and 1940's.

### *Wildlife Use*

- Moderate levels of California bighorn sheep use
- Light mountain goat use
- Heavy mule deer use, good deer winter range.

### *Current Condition of Principal Ecosystem Units*

*Due to insufficient time, seral stage assessments of the Murdock Pasture were conducted at a reconnaissance level only and should be considered preliminary at this time.*

**Current Seral Condition of Principal Ecosystem Units in the Murdock Pasture**

| Principal Ecosystem Unit | Seral Stage Representation[1] | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Middle Grasslands | | | | |
| Talus | 1 | 1 | 5 | 5 |
| Gentle to moderate slopes and terraces | **3** | 2 | **2** | **1** |
| Steep warm slopes | 1 | 3 | **2** | **1** |
| Steep cool slopes | 1 | 2 | **3** | **1** |
| Streamside riparian | **2** | 3 | **1** | **1** |
| Moist depressions and swales | **2** | 3 | **1** | **1** |
| Upper Grasslands | | | | |
| Gentle to moderate slopes and terraces | 1 | 3 | **2** | **1** |
| Steep cool slopes | 1 | 1 | **4** | 2 |
| Steep warm slopes | Insufficient data | | | |

[1]Seral stage percentage classes: 1: 0-10%; 2: 11-35%; 3: 36-65%; 4: 66-84%; 5: ≥85%; **bolded** numbers indicate representation does not meet a target (i.e. early representation is greater than the target or late+climax or climax representation is less than the target).

Historically, heavy livestock use has occurred on the level and very gentle slopes in the Middle Grasslands; as a result, little or no climax vegetation is present. California bighorn sheep use has resulted in local areas of early seral vegetation adjacent to escape terrain. Grasslands in moist depressions and swales, toe slopes, and streamside riparian sites are also in very earl condition.

Upper Grasslands on gentle slopes and broad ridges are primarily in mid seral condition but areas of late seral are also common. On steep cool slopes, Upper Grasslands have been only lightly used and are predominantly in late seral and climax condition with a smaller proportion in mid seral condition. Insufficient data are available to adequately assess seral condition of grasslands on steep south-facing slopes.

### *Management Issues*

The principal seral condition concerns in this pasture are the high proportion of grasslands in mid seral condition on moderate slopes and the high proportion of early seral grasslands on gentle slopes and moist areas. In addition, the protection of mule deer winter ranges requires management.

The Reynolds Ranch, located at Big Bar, has grazing rights in this area and has recently been acquired by The Land Conservancy. BC Parks will endeavor to work with TLC and the Ministry of Forests to ensure management of the adjacent areas is as consistent as possible.

## Strategies - Murdock Pasture

- Establish an upward trend in early and mid seral grasslands throughout the pasture.
- Consider using chemicals to control noxious weeds.

## Hartman Pasture

### *Physical Description of Unit*

The Hartman Pasture occurs along the west side of the Fraser River downstream from the confluence of the Fraser and Lone Cabin Creek. Most of the pasture is within the Lower and Middle Grasslands. Upper elevations of this pasture are largely forested and only a minor area of Upper Grasslands is present near the forest edge and in small forest openings.

Landscapes of the Lower Grasslands are predominantly steep, eroding slopes leading down to the Fraser River. These slopes are most often sparsely vegetated due to surface erosion and drought. Numerous steep-sided gullies and ravines cut into the slopes. Bedrock outcrops occur locally.

Landscapes of the Middle Grasslands include gently sloping east-facing fluvial terraces, broad ridges, and moderate to steep slopes extending upward from the grassland terraces to the forests at higher elevations. Numerous gullies and steep-sided ravines dissect the steeper slopes. Bedrock outcrops occur locally. Moist depressions and swales are uncommon, with the most prominent being near the junction of Lone Cabin Creek and the Fraser River.

Upper Grasslands occur primarily on steep, dry slopes and ridges as small openings within the forest.

### *Historic Domestic Livestock Use*

Historically this area was grazed year-round, initially by horses and later by domestic sheep and cattle. Past use has been heavy and has substantially impacted the grassland. Well developed side-slope terracettes throughout the middle elevations of this pasture are very abundant, indicating heavy livestock use in the past. Few livestock watering sources are present above the Fraser River but livestock trails provide access to the Fraser River and Lone Cabin Creek.

### *Wildlife Use*

- Very high value area for California bighorn sheep. This unit contains high value summer and winter range for non-migratory sheep that remain in the area all year. This unit also contains a critical lambing area at the very south end of the Protected Area along the Fraser River. Hartman Pasture rivals the Fraser South Range Unit (McGhee Flats) for sheep use.

- The Lower Grasslands receive extremely high levels of mule deer use during the spring green-up period and the upper forested slopes are considered to be high value mule deer winter range.
- Very light goat use.

### *Current Condition of Principal Ecosystem Units*

*Due to insufficient time, seral stage assessments of the Hartman Pasture were conducted at a reconnaissance level only and should be considered preliminary at this time.*

**Current Seral Condition of Principal Ecosystem Units in the Hartman Pasture**

| Principal Ecosystem Units | Seral Stage Representation[1] | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Lower Grasslands | | | | |
| Steep cool slopes | | Insufficient data | | |
| Steep warm slopes – Sparsely vegetated | | Insufficient data | | |
| Middle Grasslands | | | | |
| Gentle to moderate slopes and terraces | **2** | 4 | **1** | **1** |
| Steep warm slopes | 1 | 2 | **3** | **1** |
| Steep cool slopes | 1 | 1 | 5 | 3 |
| Streamside riparian (uncommon) | 1 | 2 | **3** | **1** |
| Moist depressions and swales | **2** | 3 | **1** | **0** |
| Upper Grasslands | | | | |
| Gentle to moderate slopes and terraces | **2** | 3 | **1** | **1** |
| Steep cool slopes | 1 | 1 | 5 | 2 |
| Steep warm slopes (uncommon) | | Insufficient data | | |

[1]Seral stage percentage classes: 1: 0-10%; 2: 11-35%; 3: 36-65%; 4: 66-84%; 5: ≥85%; **bolded** numbers indicate representation does not meet a target (i.e. early representation is greater than the target or late+climax or climax representation is less than the target).

Insufficient data are available to assess seral stage condition of the Lower Grasslands. Due to the very steep slopes, impacts of livestock are expected to be relatively light except along livestock trails to the Fraser River.

Middle Grasslands on gentle to moderate slopes and terraces are most heavily impacted along livestock travel corridors and in local areas heavily used by bighorn sheep. Moist swales and depressions are heavily impacted by livestock grazing.

As in the Middle Grasslands, seral stage appears to be on a slow upward trend over most ecosystems of the Upper Grasslands in the Hartman Pasture.

### *Management Issues*

The proportions of late seral and climax grassland in this pasture are well below targets. The principal seral stage concern is the large percentage of early and mid seral stage in both the Middle and Upper Grasslands. Although grassland seral stage reflects heavy use by livestock, bighorn sheep have also had significant local impacts. In addition, access to water is an issue as the two existing springs in the pasture are being impacted by livestock and wildlife. Encroachment and noxious weeds are also an issue.

The Reynolds Ranch also has grazing rights in this area and has recently been acquired by The Land Conservancy. As with Murdock Pasture, BC Parks will endeavor to work with TLC and the Ministry of Forests to ensure management of the adjacent areas is as consistent as possible.

## Strategies – Hartman Pasture

- Manage livestock use to continue the upward trend in seral stage on steep slopes.
- Improve seral condition of early and mid seral grasslands on gentle and moderate slopes in the Upper and Middle grasslands.
- Consider water development to minimize impact on riparian areas.
- Consider using chemicals to control noxious weeds.

## Lone Cabin Pasture

### *Physical Description of Unit*

The Lone Cabin Pasture extends from Lone Cabin Creek to the southern boundary of the Protected Area, bordering the west side of Murdock Pasture. It is primarily a forested landscape but includes a small area of Middle Grasslands adjacent to Lone Cabin Creek. A small area of Upper Grasslands occurs in little openings within the forest, primarily on dry slopes and ridges.

### *Historic Domestic Livestock Use*

Cattle have historically grazed this pasture quite heavily. This use is reflected in the predominantly early seral condition on the flats and a higher concentration of mid and late on the slopes.

### *Wildlife Use*

- High value mule deer winter range with significant use of the Lower grasslands during spring green-up.
- The grassland component of this pasture receives some California bighorn sheep use but is not as heavily used as the Hartman or Murdock Pastures due to the limited amount of grasslands available and their northerly aspects.
- Moderate use by predators such as bear, cougar and wolves.

### *Current Condition of Principal Ecosystem Units*

Insufficient data are available to adequately document the ecosystem units or seral condition of grasslands in this pasture. Preliminary observations suggest that the Middle Grasslands are predominantly in mid seral condition, similar to Middle Grasslands of Murdock Pasture. No data are available for the Upper Grasslands in this pasture.

### *Management Issues*

Issues include proper distribution of cattle and management of mule deer winter range.

## Strategies - Lone Cabin Pasture

- Establish an upward trend on all early and mid-seral stage grasslands.

## 4.2 Ranching and Water Management

There are currently four *Range Act* Agreements in the Churn Creek Protected Area. Gang Ranch has grazing rights covering those parts of the Protected Area north of Churn Creek. Ron Cable owns a small ranch located just north of Lone Cabin Creek on a parcel of land adjacent to the Protected Area and has grazing rights in the Lone Cabin Pasture. The Land Conservancy manages the Reynolds Ranch, which is located south of the Protected Area in the Lillooet Forest District, but has grazing rights in the Hartmann and Murdock Pastures. Finally, the former Empire Valley Ranch has grazing rights covering all the area south of Churn Creek and north of Lone Cabin Creek as well as areas west of the Protected Area.

The Empire Valley Ranch is owned by the Province and is the only operation with hayfields or infrastructure in the Protected Area; the other three ranches are only authorized to graze cattle.

As outlined in the CCLUP, each of these ranches has a maximum number of Animal Unit Months (AUM's) authorized in the Protected Area. They are:

| Ranch | Maximum # of AUM's in Churn Creek PA |
|---|---|
| Gang Ranch | 350 |
| Empire Valley Ranch | 3,850 |
| Cable Ranch | 72 |
| Reynolds Ranch | 451 |
| **Total for Churn Creek Protected Area** | **4723 AUM's** |

*It should be noted that most of the Ranching and Water objectives and strategies that follow refer only to the operations of the Empire Valley Ranch, and not to the Gang, Cable or Reynolds Ranch. Objectives and strategies that apply to the entire Protected Area are indicated as such.*

### Empire Valley Ranch

The Empire Valley Ranch in the Churn Creek Protected Area has a long and interesting history. What we know today as the Empire Valley Ranch actually started out as upwards of seven separate smaller ranches. Ownership has changed frequently over the past 140 years, with each owner making physical changes to the Ranch and managing cattle in a different manner. Details on the history of the Empire Valley Ranch can be found in *Appendix F – History of the Churn Creek Protected Area.*

## Ranch Concept

The long-term vision is that the Empire Valley Ranch will be managed as a year round cow/calf operation with the licensee (or representative) living on site. Hayfields can be renovated and enhanced, and while it is understood that the operator will be permitted to sell surplus hay to outside markets in accordance with good business practices, forage should be used to maximize grasslands conservation whenever possible. Hayfields will continue to be used for hay production or pasture, and not other agricultural uses (e.g. ginseng).

Diversification is also consistent with the long-term vision for the Empire Valley Ranch. Ranch-based agrotourism, a ranch-based Bed and Breakfast and other such economic opportunities are compatible with Protected Area management.

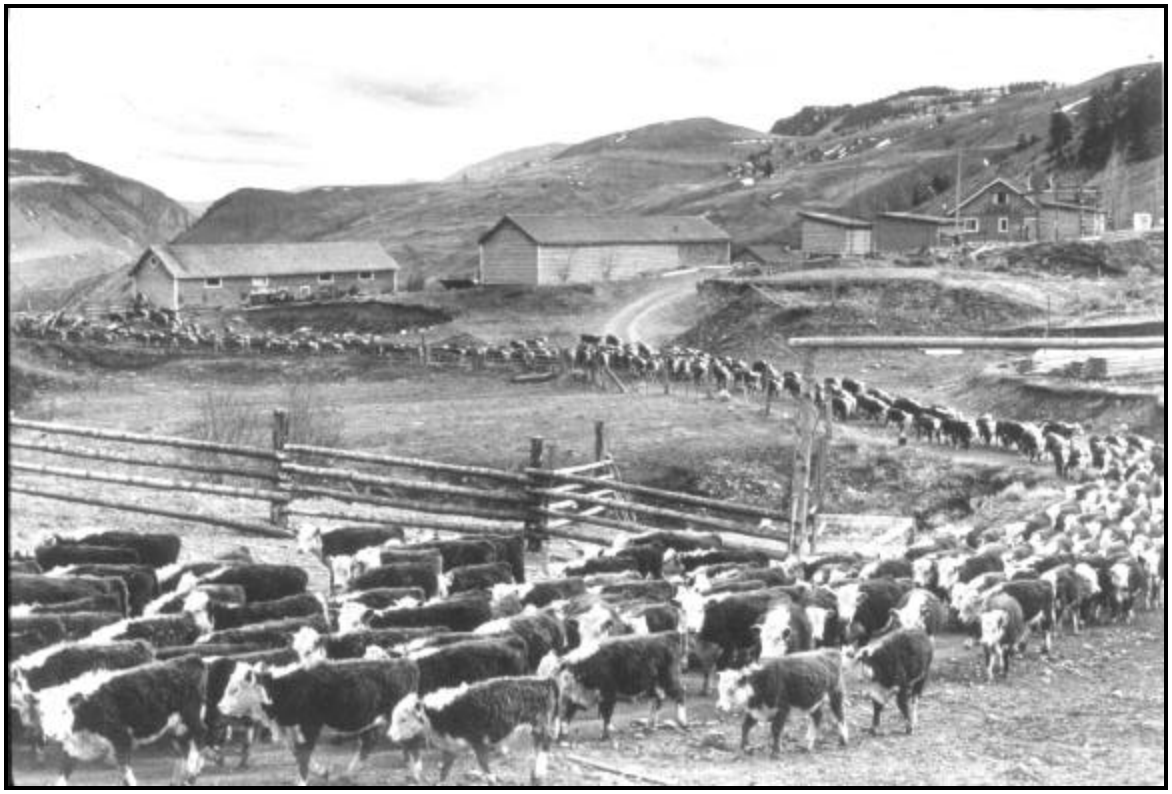


Photo by Myron Woods

**Photo Fourteen. Cattle leaving the Empire Valley Ranch headquarters in 1974. Photo courtesy of Karl Stegemann.**

## Water Licenses

Over the past 100 years or so, water systems have been developed to irrigate hayfields, provide water for cattle and supply residential needs. Other water developments and impoundments were planned and water licenses acquired, but never put into operation on the ground. As a result, a large number of water licenses exist in the Protected Area, some of which

were included with the purchase of the Empire Valley Ranch and others with private ownership. Licenses include:

| License # | Owner | Source | Quantity | Use | Year |
|---|---|---|---|---|---|
| C056527 | Gang Ranch | Churn Creek | 10,000 GD | Stock watering | 1979 |
| C055876 | Gang Ranch | Michaels Crk | 5000 GD | Stock watering | 1977 |
| F009877 | BC Parks | Little Churn and Koster Creek | 1000000 GD and 261.750 AF | Domestic Use and Irrigation. 1 POD on Little Churn, 5 POD on Koster Crk | 1875 |
| C050196 | BC Parks | Little Churn and Koster Creek | 160 AF | Storage in Little Churn & Koster Crk | 1875 |
| F005129 | BC Parks | Koster Crk | 1000000 GD and 227 AF | Domestic Use and Irrigation. POD for Dam | 1877 |
| F009286 | BC Parks | Koster Creek | 200 AF | Storage in Brown Lake | 1886 |
| F006456 | BC Parks | Koster Creek | 49 AF | Irrigation POD | 1886 |
| C061044 | BC Parks | Koster Creek | 240 AF | Irrigation Dam | 1977 |
| C061045 | BC Parks | Koster Creek | 240 AF | Storage Koster Lake | 1977 |
| F005128 | BC Parks | Grinder Crk | 1000000 GD and 153.5 AF | 3 POD Irrigation and Domestic | 1885 |
| F005127 | BC Parks | Grinder Crk | 1,000,000 GD and 104 AF | 2 POD Irrigation and Domestic | 1868 |
| F005130 | BC Parks | Grinder Crk | 47.5 AF | 1 POD Irrigation | 1911 |
| F005131 | BC Parks | Grinder Crk | 16 AF | 1 POD Irrigation | 1919 |
| F005132 | BC Parks | Grinder Crk | 20AF | 1 POD Irrigation | 1919 |
| C059914 | BC Parks | Porcupine Crk | 750AF | 1 POD Irrigation | 1977 |
| C064976 | Ron Cable | Higgenbottom Crk | 60 AF | 1 POD Irrigation | 1984 |
| C0107115 | Ron Cable | Simmons Crk | | 1 POD Irrigation | 1993 |
| C0102977 | Ron Cable | Montgomery Crk | | 2 POD Irrigation | 1993 |

GD= Gallons per Day
AF= Acre Feet
POD = Point of Diversion

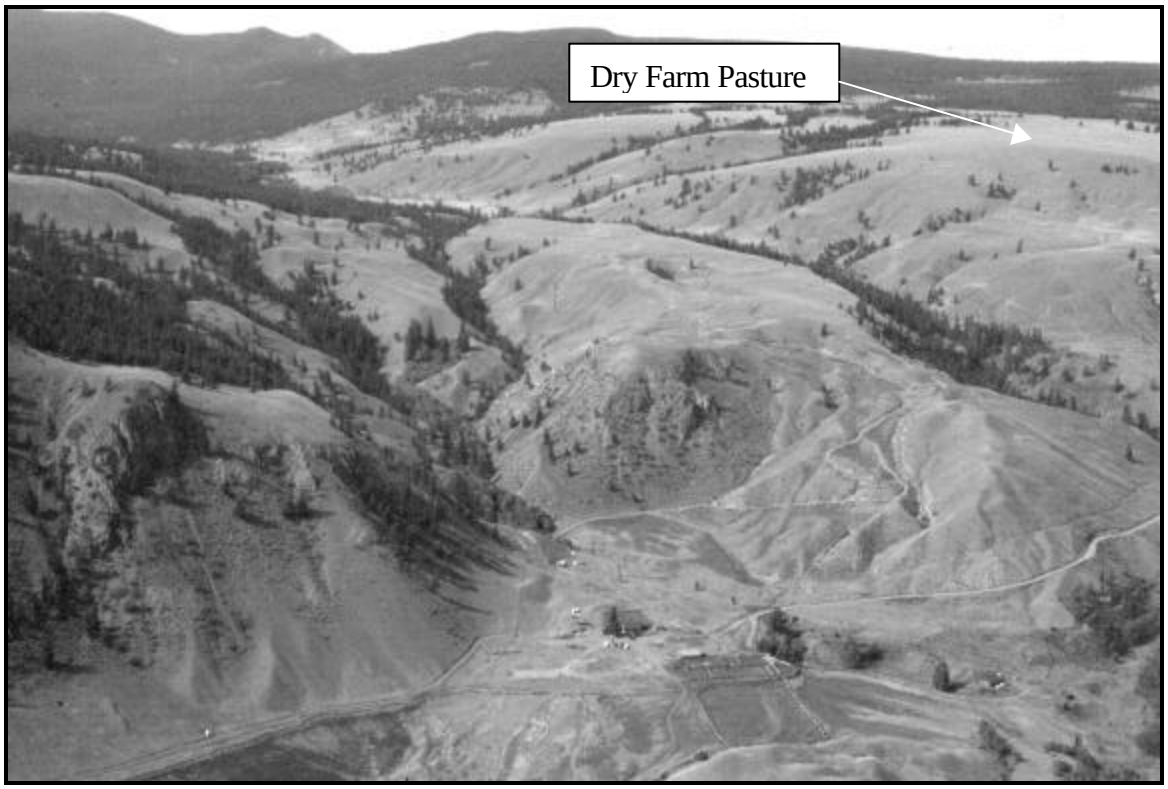



Photo by Chris Hamilton

**Photo Fifteen. Looking west up Grinder Creek. The headquarters of the Empire Valley Ranch are visible in the foreground and Dry Farm Pasture can be seen in the top right corner.**

## Objectives

*Empire Valley Ranch*

- Maintain the Empire Valley Ranch as a year round cow/calf operation.
- Maintain water licenses necessary for continued ranch operations.
- Maintain the existing hay harvesting base for the purpose of maintaining the authorized cow/calf operations.

*Entire Protected Area*

- Protect and maintain the natural qualities of water resources and their contribution to ecological processes within the Protected Area.

## Strategies

*Empire Valley Ranch*

- Empire Valley Ranch to utilize a maximum of 3850 AUM's within the Churn Creek Protected Area. (see *Appendix E – AUMs and the Churn Creek Protected Area* for details).
- Permit the Empire Valley Ranch to have a maximum of 700 cow/calves including bulls in the Churn Creek Protected Area. (see *Appendix E – AUMs and the Churn Creek Protected Area* for details).
- Permit only one herd operated by one licensee in the Churn Creek Protected Area between Churn Creek and Lone Cabin Creek.
- Where possible, use the hayfields for grazing to minimize time spent on grasslands during the critical growing season.
- Utilize existing hayfields (Bishop, Home, Tommy, Point, Koster, Boyle and Stinky) as hay base. Gap field and Grinder fields may be irrigated if required.
- Existing hayfields (Bishop, Home, Tommy, Point, Koster, Boyle and Stinky as well as Gap field and Grinder fields, which are not currently used for hay) can be renovated to improve productivity.
- Ranch operations will be a priority use of ranch infrastructure (Calving Barns, fields, barns, houses etc.)
- Upgrade existing dams and diversion structures to provincial standards.
- Permit continued bee-keeping operations in order to enhance hay production.

*Entire Protected Area*

- Additional water impoundments and diversions within the Protected Area will be discouraged, however, it is recognized some development may be necessary for a more even distribution of gazing; public recreation facilities; and upgrade of the ranch buildings.
- Examine existing water licenses to ensure they are necessary - water licenses not required for ranch operations (domestic use, stock watering and hay production) will be discontinued.
- Allow the use of firearms for euthanizing domestic livestock and predator control of problem animals by the ranching permitee(s) and authorize this in permits.
- Forbid the importing of hay into the Protected Area unless specifically authorized.

# Map Five
## *Churn Creek Protected Area*
## *Ranch Infrastructure and Water Systems*
**Located in Appendix M: Map Folio**

Photo by Chris Hamilton

**Photo Sixteen: One of the two dams at Koster Lake, located just outside the Protected Area.**

## 4.3 Forest Health and Vegetation Management

The Bunchgrass and Douglas-fir grasslands are the most significant vegetation in Churn Creek and cover the majority of the Protected Area. Primary direction on how these grasslands are to be managed can be found in *Section 4.1 Grasslands Management and Restoration*.

In addition to the 11,672 hectares of Bunchgrass grasslands (BGxh and BGxw) and 16,275 hectares of Douglas-fir grasslands (IDFxm), Churn Creek also contains 6,577 hectares of non-grassland Douglas-fir (IDFdk4 and IDFdk3), 1,643 hectares of Sub-Boreal Pine Spruce (SBPSxc) and 480 hectares of Montane Spruce (MSxv). The majority of these forests are located south of Lone Cabin Creek and on the higher elevation slopes.

Fire, disease and insect infestations are the fundamental disturbances that can be found in the forested ecosystems of the Cariboo-Chilcotin. As natural processes, these disturbances are generally allowed to continue within parks and protected areas. However, past interventions in natural disturbance patterns, particularly through the suppression of wildfires, have created 'unnatural' conditions that make ecosystem management more of a challenge. Suppression of fire, for example, results in large areas of mature forest and higher fuel loading, which leads to an increased risk of forest pest outbreaks or catastrophic wildfire. On the other hand, the suppression of fire on open range has allowed forests to gradually encroach into the grasslands.

The management philosophy of BC Parks is to allow natural processes to occur naturally to the greatest extent possible. However, fire and forest health management must also be integrated with forest and grasslands management on surrounding lands.

### Encroachment

The area of grasslands and open range in the Cariboo-Chilcotin has been significantly reduced over the past 100 years. The principal cause of this phenomenon has been the encroachment of Douglas-fir stands into the grasslands and the in-filling of open fir stands. In some areas of the region, it is estimated that encroachment and in-growth has reduced grasslands by more that 30%. *Appendix B – Encroachment* contains a map showing the most recent encroachment in the Churn Creek Protected Area. This map only shows encroachment that has happened in the last ten years – the area of grasslands lost to earlier encroachment and in-growth is not known, although regional estimates place it at approximately 11%.

The loss of grassland area due to encroachment has significant implications for both livestock grazing and biodiversity. Diminishing grasslands mean reduced forage for cattle and loss of critical habitats for red and blue listed species.

Photo by Chris Hamilton

**Photo Seventeen: A hillside showing encroachment and forest ingrowth.**

## Weed Management

Non-native plant species, including many noxious weeds, are relatively common in parts of the Churn Creek Protected Area. Many of these noxious weeds are non-native plants introduced to British Columbia without natural enemies (predators and diseases) that control them. These noxious weeds are aggressive, difficult to control and lead to the degradation of native plant communities and the reduction of forage production for livestock.

The total removal of all introduced species from the Protected Area is a impossible task. At the present time, mechanical removal and the application of herbicides are the main methods used to control noxious weeds in the Protected Area. In other areas of British Columbia, such as the Okanagan, application of expensive herbicides has been replaced with biocontrols because infestations are too widespread. Management is focused on eliminating small patches and keeping current infestations localized.

Weeds in the Churn Creek Protected Area can be widely classed into three broad groups:

1. Those that are invasive to rangeland and replace native plant species. Examples include spotted knapweed (*Centaurea maculosa*), diffuse knapweed *(Centaurea diffusa*), blueweed (*Echium vulgare*), leafy spurge (*Euphorbia esula*);

2. Those noxious weeds that are widespread and prefer disturbed sites or moister areas. Examples include burdock (*Arctium* species), hounds-tongue (*Cynoglossum officinale*), and Canada thistle (*Cirsium arvense*); and,

3. Other introduced species, all of which are undesirable from a conservation perspective. An example is Kentucky bluegrass (*Poa pratensis*).

Of the three groups, the invasive weeds are much more serious and management should be focused on removing the plants, localizing their populations and limiting their distribution to new sites.

## Rare and Endangered Plants and Vegetation

At the present time, there are only three rare and endangered plants that are on record with the British Columbia Conservation Data Center (CDC). They include:

- American Chamaerhodos (*Chamaerhodos erecta* ssp. *Nuttalli*). This is a blue listed plant and has been noted at Sheep Point in an Upper Grassland area.
- Slender Hawksbeard *(Crepis atrabarba* ssp. *Atrabarba*). This is a red listed plant that has been observed near Churn Creek in a disturbed area of Middle Grassland.
- Drummond's Campion *(Silene drummondii* var. *drummondii*). This is a blue listed plant that has been seen 2.25 kilometers east of Churn Creek in an area of Upper Grassland.

The significance of the grassland plant associations in the Churn Creek Protected Area is borne out by the fact that up to 15 of the same or equivalent associations are no longer available in undisturbed form elsewhere in the province. The CDC, in their provincial red and blue lists, have rated these associations from 'critically imperiled because of extreme rarity' to 'rare or uncommon.'

Cariboo-Chilcotin grassland plant associations are currently being re-classified and newly correlated with other provincial grasslands. When available, the rare associations will be listed as an appendix to this plan.

## Objectives

- To maintain natural plant and forest communities for their inherent value and their contribution to wildlife habitat, biodiversity and aesthetics.
- To protect rare, endangered and sensitive native plant communities.

- Prevent the establishment of non-native species.
- Where feasible, eliminate noxious weeds from the Protected Area. Ensure current infestations of noxious weeds remain localized.
- To manage for low impact scientific studies to improve the knowledge of Protected Area values and management activities.
- To allow wildfire and pest infestations in a manner that maintains the integrity of natural conditions within the Protected Area, while considering the implications for areas adjacent to the Protected Area.

## Strategies

*Fire Management*

- Prepare a fire management plan. Detailed criteria on how this fire management plan should be prepared can be found in *Appendix C: Criteria for Fire Management Plan*.
- Until the fire management plan is prepared, undertake an initial attack on all wildfires (by either the Ministry of Forests or BC Parks) until the situation is assessed. If the fire cannot be controlled on the initial attack, BC Parks, in consultation with the Cariboo Fire Center Control Officer and the Ministry of Forests District Manager, will jointly decide if the fire will be allowed to run its natural course. Unless extreme fire conditions prevail, the intent is to allow natural fires to the greatest extent possible.
- Mechanical equipment (wheeled or tracked) is only permitted on existing developed roads. Construction of new access roads or helicopter pads for fire suppression purposes requires approval from BC Parks District Manager.

*Pest Management*

- Insect infestation that could spread to epidemic proportions or to adjacent lands will be controlled by using low impact, site-specific methods, such as single-tree disposal.
- No new access will be created to address pest infestations. Where possible, allow infestations to run their natural course.

*Disturbed Areas and Old Roads*

- Control erosion on open roads using methods such as waterbars and ditching.
- Rehabilitate disturbed sites with native species.
- Deactivate closed roads (see *Section 4.6- Access Management* for details) and roads that are not used by ranchers or licensees.

*Weed Management*

- Map occurrences of noxious weeds. Complete reconnaissance level mapping for areas that are not currently inventoried for noxious weeds.
- Develop annual weed management priorities with other agencies with a weed management mandate, including Ministry of Forests, Ministry of Agriculture and the Ministry of Transportation and Highways.
- Vehicles that are in the Protected Area on a regular basis (e.g. BC Parks vehicles, ranch vehicles, Ministry of Forest Range vehicles, research vehicles) should be monitored for the presence of noxious weeds.
- Before bringing horses or cattle into the Protected Area, animals should be thoroughly checked and cleaned for burrs. Horse's hoofs should be picked free of dirt. Cattle being moved from one grazing unit to another, particularly when coming from an area of heavy weed infestation, should be thoroughly de-burred.
- Heavy equipment must be pressure-washed prior to entering the Protected Area.
- Consider the use of biocontrols to control noxious weeds.

*Interim Weed Management*

- The priority for managing introduced species should focus on those species classed as noxious under the *Weed Act* and of these, emphasis should be placed on removing and controlling those that are invasive onto range land i.e. spotted knapweed, diffuse knapweed, leafy spurge
- Make a concerted effort to eliminate blueweed, leafy spurge and diffuse knapweed from the Protected Area.

## 4.4 Wildlife and Fish

The grasslands of the Cariboo-Chilcotin contain tremendous diversity of wildlife species. It has been estimated these grasslands contain 14% of the species on the provincial red list and 39% on the blue list[8]. The Churn Creek Protected Area captures much of this diversity, stretching 25 kilometers along the Fraser River and encompassing arid grasslands at river level, cooler benchlands, grassland/forest edges, dry Douglas-fir forests, and moister, high elevation pine and spruce forests. In addition to these terrestrial habitats, Churn Creek contains a number of kettle lakes, streams and large creeks with diverse fish populations.

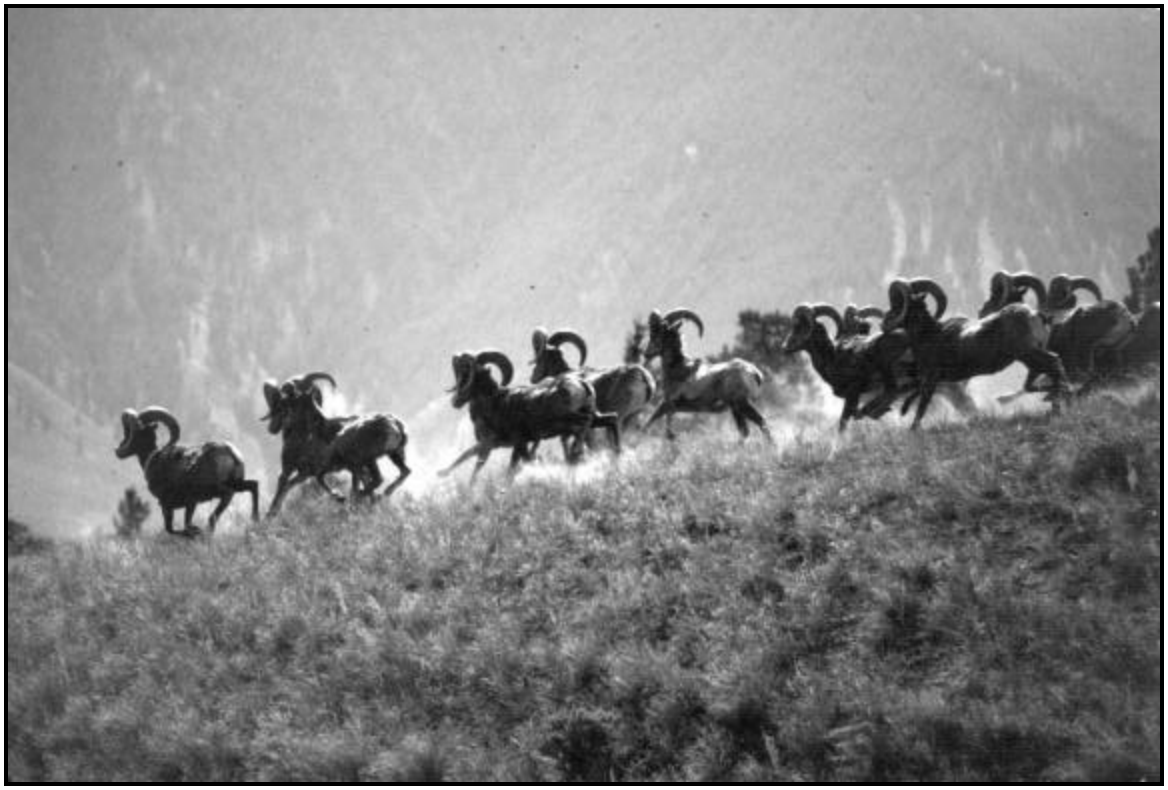


Photo by Chris Hamilton

**Photo Eighteen: The resident herd of California bighorn sheep in the Lower Grasslands above the Fraser River.**

The mosaic of grasslands, shrub-steppe, moist and wet ecosystems and dry, open forests of the Churn Creek Protected Area offer a varied series of habitats, supporting populations of California bighorn sheep, mule deer, black bear, cougar, bobcat, lynx and a number of small mammals. Significant concentrations of bird, bat, amphibian and reptile species can also be found in the Churn Creek grasslands, and a number of these species are at their northern

[8] Pitt and Hooper, 1995. Problem Analysis for Chilcotin-Cariboo Grassland Biodiversity. BC Environment Wildlife Bulletin No. B-82.

breeding limits. Since the small lakes, marshes and creeks either remain ice-free or are among the first to become ice-free in the spring, they provide important staging and stopover areas for migrating waterfowl and year-round habitat for muskrats, reptiles and amphibians.

## California Bighorn Sheep

The Churn Creek California bighorn sheep sub-population is comprised of three distinct herds with somewhat separate strategies for survival.

A non-migratory herd resides year round in the vicinity of their winter ranges and move locally between various seasonal habitats. The non-migratory herd is generally found along the Fraser River and lower Churn Creek.

The migratory component of bighorn sheep includes two distinct herds which winter in the Protected Area and summer in high elevation alpine sites on Red Mountain, Nine Mile Ridge and Yalakom Mountain. The two migratory herds use relatively distinct summer and winter ranges. The largest migratory herd is centered around the Wycott Flats and Sheep Flats winter ranges located along the north side of Churn Creek and west of Gang Ranch. This herd of predominately ewes lambs in May near the winter range on rugged cliff complexes west of Sheep Flats and then migrates later in June/July to Red Mountain for the summer months. The return (fall) migration for the ewes and lambs from Red Mountain usually occurs in September through October.

The second migratory herd is centered around Churn Flats and Little Churn Creek. This herd has had a more erratic migratory pattern. In some years the bulk of the ewes migrate early (late April/May) to Yalakom Mountain where some or all lamb at high elevation sites. In recent years a portion of the herd has migrated early with the remainder migrating to Yalakom Mountain later in the spring with their lambs. In the fall the Yalakom Mountain herd tends to return to the winter range later than the Wycott herd, usually remaining on the summer range well into November before returning to Churn Flats by the beginning of December.

The ram component of these two migratory herds share similar migration patterns with the ewe and lamb component with the only difference occurring in choice of summer ranges. The majority of rams summer on Nine Mile ridge segregated from the ewe and lamb groups. A smaller ram component shares Red Mountain with the Wycott ewes and lambs. The migration patterns of rams tend to also be more erratic than that of ewes and lambs. The spring migration is similar to that of the ewes and lamb groups but the fall migration is less predictable with some groups periodically splitting up and individuals or small groups returning to the wintering areas as early as mid August or as late as November.

Bighorn sheep winter ranges are generally open grassland habitats (usually on warm aspects) associated with nearby escape terrain. Escape terrain is usually defined as steep slopes or cliffs with a minimum of 60% - 70% slope. In periods of excessive snow depth bighorn sheep may

retreat under nearby forest canopy, making them more vulnerable to predation. Bighorn sheep are a species adapted to open terrain. They use their keen eyesight and ability to negotiate steep and rugged terrain as their main method of detecting and avoiding predators.

Lambing areas usually consist of steep cliff complexes intermixed with small terraces and/or ledges. Terrain commonly used for lambing is rugged and remote in order to provide ewes security and isolation for the lambing period. Lambing can occur from mid April through to early July. The peak occurs from mid May to the mid June period.

### Mule Deer

There are approximately 2000 to 3000 mule deer that winter in or immediately adjacent to the Churn Creek Protected Area. This is the highest regional density and one of the highest provincial densities. Like the bighorn sheep, the Churn Creek herd has a small resident component and a significant migratory component.

In the spring and summer mule deer from Churn Creek and adjacent areas disperse over a large part of the Chilcotin Plateau and into the Chilcotin Ranges. Some animals travel substantial distances to summer in alpine and semi-alpine habitats as far away as Taseko Lakes, Dil Dil Plateau, Relay Mountain and Red Mountain.

The Churn Creek Protected Area is a critical spring range as well as providing some winter habitat values. Mule deer require access to this spring range to recover from the rigors of winter, particularly adult does with rapidly developing fetuses. The flush of new spring plant growth that occurs in April and the nutrients it provides are critical for the final development of healthy fawns which are usually born later in late May or June. For this reason large numbers of deer will move onto the open or semi-open habitats in early April to find the warm aspects and lower elevations where the first flush of plant growth is occurring. A component of the deer population will follow this green-up into the alpine and semi alpine habitats.

### Rare and Endangered Wildlife Species

In addition to provincially significant California bighorn sheep and deer populations, the Churn Creek grasslands provide habitats for a significant number of red and blue listed species.

The Bunchgrass biogeoclimatic zone is primarily located along valley bottoms in some of the warmer and dryer parts of British Columbia, areas that are attractive for human activities such as cultivation, recreation and settlement. Many of these human activities threaten both the grassland habitat and the animal populations that inhabit the grasslands. The highly specialized environment of the grasslands gives rise to many rare forms of life, including 75 species of invertebrates that occur nowhere else in Canada.

Some of the specific species at risk that may inhabit the Churn Creek Protected Area include:

| Species | Class | Occurrence |
|---|---|---|
| American Bittern | Blue | Suspected |
| Bobolink | Blue | Suspected |
| Brewer's Sparrow | Red | Suspected |
| Fisher | Blue | Suspected |
| Flammulated Owl | Blue | Suspected |
| Fringed Myotis | Blue | Suspected |
| Gopher Snake | Blue | Known in some locations, Suspected and Probable in others |
| Great Basin Spadefoot Toad | Blue | Known in some locations, Suspected in others |
| Gyrfalcon | Blue | Known in some locations, Suspected and Possible in others |
| Lark Sparrow | Red | Suspected in some locations, Probable in others. |
| Lewis' Woodpecker | Blue | Suspected |
| Long-billed Curlew | Blue | Suspected |
| Northern Goshawk | Yellow | Known in some locations, Suspected and Probable in others |
| Painted Turtle | Blue | Suspected |
| Pallid Bat | Red | Known in some locations, Suspected in others |
| Peregrine Falcon | Red | Suspected |
| Prairie Falcon | Red | Suspected |
| Racer | Blue | Known in some locations, Suspected and Probable in others |
| Rubber Boa | Blue | Known in some locations, Suspected in others |
| Sharp-tailed Grouse | Blue | Known in some locations, Suspected in others |
| Short-eared Owl | Blue | Suspected |
| Spotted Bat | Blue | Known in some locations, Suspected and Probable in others |
| Swainson's Hawk | Red | Suspected |
| Townsend's Big-eared Bat | Blue | Known in some locations, Suspected and Probable in others |
| Upland Sandpiper | Red | Suspected |
| Western Rattlesnake | Blue | Known in some locations, Suspected in others |
| Western Small-eared Myotis | Blue | Known in some locations, Suspected and Probable in others |
| White-throated Swift | Blue | Known in some locations, Suspected in others |
| Yellow-breasted Chat | Red | Suspected |

"Known" species are those which have been observed in the Churn Creek Protected Area. "Suspected" species those that are likely to occur in the CCPA based on known distributions of the species. "Possible" species are those that could potentially occur in the CCPA but are less likely. Details on specific habitats that support these rare and endangered species can be found on the map in Appendix A.

## Waterfowl

Wetlands in the Churn Creek Protected Area are in close proximity to the Riske Creek/Alexis Creek aspen parklands, some of the most productive waterfowl habitat in the province. The Cariboo Chilcotin is also home to 60-90% of the world's population of Barrow's Goldeneyes, a species that take advantage of the proximity of trees and abundant food in the wetlands of the Protected Area.[9]

Dry Lake and Hog Lake are Class 3 Waterfowl Production Areas and BC Lake, Hairy Fish Lake, Brown Lake, and Koster Lake are Class 4 Waterfowl Production Areas. The abundant aquatic invertebrates in Koster and BC Lake support several hundred waterfowl at a time during spring and fall migration and during moulting in the summer.[10]

## Fish

The Churn Creek Protected Area encompasses several main watersheds. Churn Creek is the largest watershed within the Protected Area, however two other Fraser River tributaries – Grinder Creek and Lone Cabin Creek - fall within the Protected Area boundaries.

### Churn Creek

Several Fish and Fish Habitat inventories have been undertaken on the Churn system. The most comprehensive study was undertaken by Lignum Ltd. under FRBC funding in 1996. Information from that study provides the basis for much of the following.

The key factor in determining the area colonized by various fish species is the presence of a barrier falls approximately 19 km upstream of the Churn / Fraser confluence. Upstream of the barrier only bull trout and rainbow trout have been captured. Downstream of the falls rainbow

[9] Savard, J-P.L. 1991. Waterfowl in the Aspen Parklands of Central British Columbia. Technical Report Series No 132. Canadian Wildlife Service. Pacific and Yukon Region, British Columbia

[10] The Canada Land Inventory list seven classes of Wildlife Capability. Class 1 has no limitations while class 7 areas have severe limitations. Class 3 lands (Dry Lake and Hog Lake) have a high proportion of both temporary and semi-permanent shallow marshes poorly interspersed with deep marshes and bodies of open water. They have a moderately high capability for the production of waterfowl but may be affected by occasional droughts and other slight limitations. Class 4 lands (BC Lake, Hairy Fish Lake, Brown Lake, and Koster Lake) have water areas that are predominantly temporary ponds or deep, open water with poorly developed marsh edges. Class 4 lands have a moderate capability for the production of waterfowl but have more limitations than Class 3 areas.

and bull trout have both been identified along with chinook, longnose dace, longnose suckers, and pink salmon. Coho and sockeye salmon and possibly steelhead may also use the system

*Upstream of Barrier*

Rainbow trout - almost all streams that had a connection to the mainstem Churn were found to contain rainbow trout. In addition, rainbow trout were found in West Churn Creek above a series of waterfalls that appear to be barriers to upstream migration.

Bull trout - all major streams except for upper West Churn Creek were found to contain bull trout.

Both of these species were found in the headwaters of tributary streams, including Dash Creek where they were captured at 1800 meters. They are both considered to be important populations because they are isolated from other populations within the Fraser River drainage.

*Downstream of Barrier*

Rainbow trout - captured during several of the inventories although not as numerous in the lower reaches of the system

Bull trout - captured during one of the inventories however, warm water conditions during the summer may restrict bull trout use

Steelhead - no reports of steelhead using the Churn system, however, the stream is large enough to support a small population

Chinook Salmon - juvenile Chinook were sampled at various locations downstream of the barrier. In addition, the 1996 Churn study indicated that large fish (>70cm.), believed to be Chinook adults were observed within 100 meters downstream of the falls.

Coho Salmon suspected to occur in lower section

Pink Salmon - observed in first 4 kilometers

Sockeye Salmon - recorded in the lower section. (Speculation that sockeye in Churn Creek are strays from Chilko or Horsefly systems. It is unclear if sockeye spawn in Churn.

Longnose Dace - captured at inventory sites in the lower portion of the system.

Longnose Suckers - captured near the mouth of Churn Creek

## Fraser River

A small population of sturgeon are known to inhabit the portions of the Fraser River adjacent to the Protected Area. Sturgeon are presently a blue listed species and identified in the CCLUP as requiring special protection.

### Lone Cabin Creek

Fish inventory was undertaken in 1983 on Lone Cabin Creek as part of a mining proposal on Black Dome Mountain. A set of impassable falls is located within 200 meters of the Fraser River. In addition, at least two more sets of falls are known on the Lone Cabin system.

*Below First Barrier*

Rainbow trout - juvenile rainbow trout have been found in the section downstream of the falls
Chinook salmon - juvenile Chinook use the lower section for short-term rearing. It is unlikely that Chinook spawn in this small stream

*Above Barrier*

Bull trout - have been captured in upper Lone Cabin and Porcupine Creek and are expected to be found throughout.

Rainbow trout - this creek may contain rainbow trout on the upper reaches as a result of the previous stocking of Roaster Lake (headwaters of Lone Cabin Creek)

### Grinder Creek/Koster Creek

Although no fish stream inventory has been undertaken on the Grinder watershed, two lakes have been surveyed. Koster and Brown Lakes received a reconnaissance level inventory in 1997. Lake chub, large scale suckers and red side shiners were found in the lakes. A report from a local source indicated that rainbow trout may have inhabited the lake in the past.

## Objectives

- Manage for the habitat needs of all species by providing a range of habitats that include grassland and forest ecosystems.
- Maintain and/or recover to optimal levels[11] species [12] and habitats at risk, including rare habitats.
- Protect wildlife habitat features[13] (See Appendix A).

[11] "Optimal" is a combination of historic levels and the area's carrying capacity - this concept requires more research.
[12] "At Risk" refers to species or habitats that are rare, endangered, sensitive or vulnerable (red, blue and yellow listed).
[13] "Wildlife Habitat Features" are specific features of wildlife habitat that support specific wildlife or groups of wildlife such as mineral licks, nest trees or nest sites etc.

- Maintain ungulate winter and spring ranges in a condition that will support populations during critical winter conditions.
- Minimize displacement of wildlife from preferred habitats.
- Avoid disease transmission between domestic livestock and wildlife.
- Prevent the introduction of exotic plant and animal species and address the spread of existing exotics.
- Provide hunting opportunities for game species that support sustainable populations.
- Monitor and research interactions between wildlife and domestic livestock.

## Strategies

*Wildlife*

- Develop a long term management plan for wildlife with Wildlife Branch, BC Parks, Ministry of Forests and First Nations.
- Use biophysical mapping and other resources to delineate high value ungulate habitat areas (spring, winter and natal areas).
- Establish wildlife population census areas in the Protected Area and ensure long-term monitoring.
- Develop specific habitat prescriptions for species or habitats at risk.
- Determine and provide sufficient carryover forage on California bighorn sheep winter range for deep snow winters.
- Determine and provide sufficient carryover forage on ungulate spring ranges.
- Use prescribed burning to address maintenance of grassland ecosystems, reduce encroachment and enhance wildlife habitat.
- Prohibit domestic sheep, goats or llamas in order to prevent transmission of disease to wild populations.
- Utilize wildlife safe fencing standards.
- Prohibit the importing of hay into the Protected Area unless specifically authorized.
- Avoid placing salt, mineral or protein blocks in areas frequented by bighorn sheep.

*Trapping*

- Authorize, by Park Use Permit, the continuation of pre-existing trapline operations. Allow the use of firearms and snowmobiles for trapline management by the registered trapline holder and authorize this in permits.

*Fish*

- Complete fish and fish habitat overview inventory on Grinder and Koster Systems
- Screen irrigation inputs (culverts, dams and irrigation ditches) where fish are present.
- No stocking of any lakes in Protected Area.

**Map Six:**
***Churn Creek Protected Area***
***Sheep Habitat***
**Located in Appendix M: Map Folio**

## 4.5 Recreation Management

The Churn Creek Protected Area provides settings that support opportunities for low-impact, dispersed, motorized and non-motorized outdoor recreation and nature appreciation. Recreation opportunities in the Protected Area include day hiking, horseback riding, mountain biking, hunting, camping, wildlife viewing and natural landscape appreciation. Snowmobiling opportunities are limited by terrain and lack of snow. Angling is limited by limited populations of sport fish.

One of the largest challenges to managing recreation in the Churn Creek Protected Area is providing opportunities that are compatible with the operations of the Empire Valley Ranch. The infrastructure necessary for the operation of a ranch, including cow trails, fences, corrals, barns, roads, gates and buildings are all integral to the function and history of the area. In addition to ranching, the Protected Area has a long history of mining, logging and homesteading. Visitor expectations need to be managed to reflect this multiple-use past.

The other challenge to recreation management is minimizing the impact of visitor activities on wildlife populations and the sensitive grassland ecosystems. Grassland parks and protected areas are new to British Columbia's system of Parks and Protected Areas, and as a result there is limited knowledge about the impacts of recreation on these areas. A conservative approach to managing recreation will be adopted.

Yet another challenge with recreation is ensuring traditional activities by First Nations can continue and that sensitive archaeological sites are not disturbed. This is addressed *Section 4.7 - Cultural Heritage*.

The Churn Creek area has not seen a large amount of recreation in the past. Use has been limited predominantly to deer and sheep hunting. The custom of restricting access to private lands, which has been practiced by owners of the Empire Valley Ranch since the 1920's, has had a discouraging effect on recreation. With the purchase of the Ranch and the creation of the Churn Creek Protected Area, interest in other types of recreation has increased.

All recreation activities must be managed so they:

- are compatible with Protected Area objectives and zoning;
- do not conflict with one another; and,
- compliment the natural or cultural values.

## Recreation Concept

The zoning for Churn Creek divides the Protected Area into three different zones. Each zone is intended to support different types and levels of recreation. Zones include an Intensive Use/Recreation Zone; a Natural Environment Zone, which is further sub-divided into Motorized and Non-Motorized Sub-zones; and a Special Feature Zone. The intent of these zones as they relate to recreation are as follows:

**A. Intensive Use/Recreation Zone.**

This valley bottom zone includes the road into the Empire Valley Ranch, all the hayfields, the ranch headquarters, barns and corrals, and the calving barns. The intent in this zone is to recognize the continued working ranch and hay base, as well as providing a formal staging area and camping area in the vicinity of the calving barns. Visitors should expect to see working ranch vehicles and equipment associated with the Ranch, as well as vehicles using the area as an industrial corridor.

**B. Natural Environment Zone.**

This zone is broken down into Motorized and Non-Motorized Sub-zones.

i. Motorized Sub-zone

This sub-zone, which consists of a small area in North Churn and a large section in South Churn, is intended to allow motorized access for hunting, scenic appreciation, wildlife viewing, informal camping and other opportunities associated with roaded areas in the Natural Environment Zone.

ii. Non-Motorized Sub-zone

This large sub-zone includes the remainder of the Protected Area and is intended to provide settings for a wide variety of non-motorized recreation. A network of old logging roads, ranch roads and cattle trails provide opportunities for mountain biking, walking, hiking, hunting, wildlife viewing camping and horseback riding in a non-motorized setting.

**C. Special Feature Zone.**

This zone is intended to provide the highest level of protection available for three Benchmark Areas. These Benchmark Areas are representative of a number of ecosystems in the Protected Area and will not be grazed by domestic livestock. Details of these Benchmark Areas can be found in *Section 7.0 – Benchmark Areas*. This system of Benchmark Areas will be used to study how grassland ecosystems change over time, and will be used to study lichen communities, the role of fire, impacts of ungulates on grasslands and other related projects. Recreational uses are discouraged in these small areas. Strategies for managing use are outlined in *Section 7.0 – Benchmark Areas*.

## Objectives

- Provide high quality, low impact recreation activities that have minimal impact on grasslands, wildlife and cultural heritage values.
- Provide basic infrastructure necessary for visitor appreciation of the Protected Area.
- Limit recreation promotion, development and use in order to enhance conservation values.
- Enhance visitor awareness with respect to protection of grasslands and wildlife populations.
- Ensure recreation activities are managed and monitored for their potential impacts on natural and cultural heritage values, particularly on grasslands and on wildlife ranges and populations.
- Issue Park Use Permits for those activities that existed prior to June 1994.
- Provide opportunities for commercial recreation that are compatible with the values of the Protected Area.
- Ensure public access to the Protected Area is not pre-empted by commercial recreation activities.

## Strategies

*Fishing*

- Recognize fishing as a pre-existing and allowable activity in the Protected Area.

*Hunting*

- Recognize hunting as pre-existing and allowable activity in the Protected Area. Allow motorized access within the Protected Area in the two Motorized Subzones. Access to all other areas is by non-motorized means (e.g., foot, horseback, mountain biking.) *See Section 467 -Access Management Strategy* - for details on open roads.
- A management plan for wildlife will be developed with Wildlife Branch, BC Parks, Ministry of Forests and First Nations. *See Section 4.4 - Wildlife, for details on wildlife management*.

*Cougar, Bobcat and Lynx Hunting with Snowmobiles*

- Recognize hunting of cougars, lynx and bobcat using a snowmobile as a pre-existing and allowable activity in the Churn Creek Protected Area. The season is as outlined in the Hunting Regulations.

- Cougar, bobcat or lynx hunters must have a valid hunting license and tag.
- Snowmobiles must stay on existing roads and trails and stay off grassland areas. Use and impacts will be monitored. If it is shown that snowmobiles are impacting grasslands and not staying on roads and trail, all hunters using snowmobiles will be required to obtain a Park Use Permit from BC Parks. This Permit will be free of charge and apply to the whole season. The Permit will have a map showing designated open roads and will list penalties for going off these designated roads. Grassland areas may be closed completely to hunting with snowmobiles if impacts cannot be controlled.

*Developed Camping and Day-Use Facilities*

- Develop a staging area for horseback riders and other Protected Area users. This area should be located in the vicinity of the Calving Barns in the Intensive Use/Recreation Zone. A campground may be developed when use levels warrant.
- Provide a small interpretive site and parking lot adjacent to the Empire Valley Ranch headquarters.

*Primitive Camping*

- Primitive camping is permitted in the Natural Environment Zone, but not in the Intensive Use/Recreation or Special Feature Zones. Manage primitive camping opportunities so that there are no designated primitive sites or facilities developed, (unless required to mitigate impacts or for public health reasons), and so that this activity leaves no permanent evidence. Identify environmentally sensitive sites where overnight use will not take place. A pack-in/pack-out policy will apply and use levels and impacts will be monitored over time. Camping areas may be closed or adjusted over time if negative impacts area shown.
- Firewood collection is permitted, but the use of gas stoves should be encouraged. Dead and down wood only to be used.

*Recreational Snowmobiling*

- Allow recreational snowmobiling in the designated snowmobile corridors in North Churn and Blackdome Road. The remainder of the Protected Area is closed to recreational snowmobiles. Levels of use or areas of use may be adjusted over time if impacts are shown. *See Section 4.6 - Access Management Strategy* - for corridor details.

*Horse Use*[14]

- Continue to provide horseback riding opportunities. Levels of use or areas of use may be adjusted over time if impacts are shown.
- Group use is permitted, but should not be promoted. Such use should be monitored with a view to limiting the number of horses per group and/or the number of groups per season of use.
- Large groups (twelve or more) must register with BC Parks and be provided with the Leave No Trace Code of Ethics for backcountry horse use.
- Groups of twelve or more horses must stay on trails and roads. No restrictions for groups less than twelve.
- Forage for horses is low and in direct competition with cattle and wildlife use. Only weed-free, pelleted feed or hay purchased from the Empire Valley Ranch will be used. Grazing is not permitted.
- Horseback riders are encouraged to use the Calving Barns as a staging area.
- Monitor levels of horse use and the impacts of this activity.
- Aside from the staging area at the Calving Barns, do not allow any new, permanent support facilities, such as corrals, or loading/unloading facilities, inside Protected Area boundaries.
- Commercial horse use should not displace non-commercial, public use.

*Mountain Biking*

- Mountain bike use is limited to existing roads and trails. Levels of use or areas of use may be adjusted over time if impacts are shown.

*Non-Mechanized Public Recreation (hiking, backpacking, cross-country skiing etc.)*

- Encourage public recreation opportunities that are non-mechanized and non-motorized. (E.g. hiking, backpacking or cross-country skiing). Levels of use or areas of use may be adjusted over time if impacts are shown.
- A pack-in/pack-out policy applies.

*Commercial Recreation (Tourism) Use*

- Authorize, by Park Use Permit, the continuation of pre-existing guide-outfitting operations.

[14] "Horse" includes mules and other equines.

- Authorize, by Park Use Permit, pre-existing backcountry recreation operators at their historic levels of use.
- Consider accepting new applications for commercial recreation. Generally, agro-tourism, cultural heritage tourism, horseback riding, nature appreciation tourism or a small bed and breakfast located at the ranch headquarters[15] are compatible with the values of the Protected Area. Any new activities will have to be compatible with the Churn Creek Protected Area Management Plan.
- Restrict tourism-related infrastructure (overnight accommodation) to the immediate vicinity of the ranch headquarters.
- Monitor the effects of commercial recreation use and adjust Park Use Permits where need is demonstrated to control environmental impacts from concentrated visitor use.
- Implement a policy that any new permitted commercial recreation camp areas will not have permanent structures or facilities and will be wilderness-type camps. A pack-in/pack-out policy will apply.

*Jet Boats and Rafting*

- Jet Boat landings are recognized as a pre-existing method of hunting and will be allowed to continue. Levels of use or areas of use may be adjusted or closed over time if impacts are shown.
- No commercial jet boat or rafting operations will be permitted.

*Trail Use and Identification*

- Focus recreational use on the trails shown on the attached map (Map Seven). Encourage visitors to stay on trails and roads.
- Trails will not be upgraded or improved and will have only very basic levels of signage.
- All trails are open to the public, including trails used by commercial operators (including ranch operations, guide outfitters and commercial recreation operators).
- Trails may be closed during certain conditions (extended periods of rain, soft conditions after a late thaw) or times of year (sheep lambing season) to prevent trail damage and/or displacement of wildlife.

[15] The bed and breakfast or any ranch-based tourism would have to be in cooperation with the permit for the ranching operation.

# Map Seven:
## *Churn Creek Protected Area*
## *Non-Motorized Routes*
**Located in Appendix M: Map Folio**

Photo by Chris Hamilton

**Photo Nineteen: The Calving Barn will be redesigned as a recreational staging area/future campground shared with Empire Valley Ranch operations.**

## 4.6 Access Management

The Churn Creek Protected Area and adjacent areas have had a long history of ranching, logging and mining. Because of these past land uses, a network of ranch roads, cattle trails, logging roads, skidder trails and mining roads spreads across the Protected Area and beyond. Portions of many of these roads are located on the formerly private lands of the Empire Valley Ranch and on the private lands of the Gang Ranch. Public access to these lands has been restricted since the 1930's. Large pieces of Crown land are interspersed with these private and formerly private lands, and access to roads on the Crown land has always been permitted.

The Cariboo Chilcotin Land Use Plan contains a significant amount of direction on road access both within and through the Protected Area. Specific direction on access includes:

> "There will be a continuance of access and provision for utility corridor(s) (infrastructure necessary for mine development) along the existing roads, including any future upgrading as may be required for resource development, through the Churn Creek Protected Area ... for all resource and non-resource users. It is necessary that any subsequent Order-In-Council establishing this protected area and any subsequent protected area management plan must reflect this commitment."
> (*90 Day Implementation Report*, page 36)

> "Access to both ranching lands and the Churn Creek placer tenures within this protected area will continue." (*90 Day Implementation Report*, page 36)

> "Churn Creek Protected Area contains a number of pre-existing placer tenures along Churn Creek which, as part of the cross-sectoral accord in the development of the Land-Use Plan, will retain present rights of access, use and development."
> (*90 Day Implementation Report*, page 34)

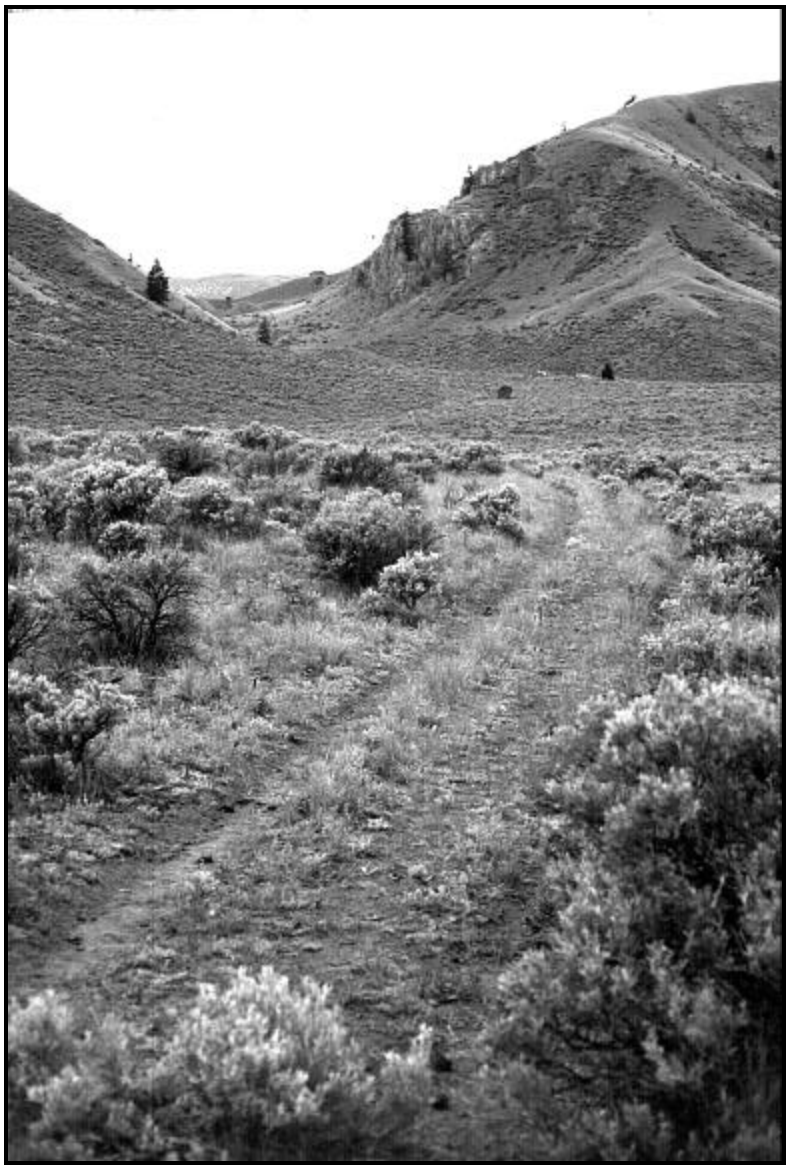
> "Existing landowner use, development and access rights will be unaffected by protected areas." (*90 Day Implementation Report*, page 34*).*

The challenge for managing access in the Churn Creek Protected Area is to continue to provide the access guaranteed in the CCLUP while protecting the significant conservation values the area was created to capture.

For access purposes, the Churn Creek Protected Area can be looked at as two separate units - North and South Churn.

## South Churn

The only road access to South Churn is on the Empire Valley Road, which starts at the Churn Creek Bridge at the extreme northeast corner of the Protected Area. From the Churn Creek Bridge, the Empire Valley Road leads 18.1 kilometers south to the Empire Valley Ranch Headquarters. Approximately 3.9 kilometers north of the Ranch headquarters, the Blackdome Mine Road splits off the Empire Valley Road and heads in a southwesterly direction towards Blackdome Mountain. Approximately ten kilometers down the Blackdome Road, the Fernier Perlite Mine Road splits off and heads due south just inside the Protected Area boundary through the Higgenbottom Valley. It ends at the Perlite Mine, located just outside the Protected Area boundary.



**Photograph Twenty: This old ranch road going through Coal Pit Pasture is typical of the many roads in the Protected Area.**

Photo by Chris Hamilton

About four kilometers south of the Churn Creek Bridge, the Iron Gate Road splits off the Empire Valley Road and also heads in a southwesterly direction back into the Protected Area. A large number of smaller logging, mining and ranch roads lead off both the Blackdome and Iron Gate Roads.

The Empire Valley Ranch Road is a Section 4 Road under the *Ministry of Transportation and Highways Act* and is maintained by the Ministry of Transportation and Highways. The Ministry of Highways also maintains 2.93 kilometers of the Blackdome Road. This 2.93 kilometers is also a Section 4 road.

## North Churn

The main access to North Churn is either through the Gang Ranch on the 3100 Road or through Farwell Canyon on the 2800 Road. The 3100B Road splits off the 3100 road and leads to the cattle guard at Blackwater Lake, which forms the Protected Area boundary. The road in the Protected Area continues south along the west side of a snake fence and has a number of spur roads which lead into old cut blocks. The road continues south for about five kilometers, where it splits into three branches. One branch continues downhill to the private lands of the Gang Ranch at Wycott Flats. The road proceeds through the private land on to the placer mines located on Churn Creek. The other two branches of the road continue on either side of the Goose Lakes and meet at a small spring south of the lakes. The road stops at a small viewpoint about a kilometer past the spring.

Virtually all the roads in the Protected Area are rough and become very muddy and dangerous in a short time period of time in any wet weather.

## Objectives

- Ensure traditional use and access to the Protected Area continues in accordance with the CCLUP.
- Provide a corridor through the Protected Area for industrial traffic.
- Minimize the impact of motorized vehicles on grasslands and wildlife populations.
- Ensure private land owners have access to their property.
- Ensure First Nations have access for aboriginal rights.
- Provide an appropriate level of visitor access to recreation opportunities within the Protected Area without compromising the conservation features of the Protected Area.
- Cooperate with other agencies concerning access through the Protected Area.

## Strategies

*Industrial Corridor*

- The Blackdome Mine and the Fernier Perlite Mine Rd are confirmed as the designated Industrial Corridor through the Protected Area. All industrial users will use these roads only.
- The Industrial Corridor through the Churn Creek Protected Area is a designation created by the Cariboo Chilcotin Land Use Plan. As such, this Protected Area Management Plan will not restrict industrial uses on the corridor. Hauling restrictions through the Churn Creek Protected Area have been negotiated through the South Chilcotin Subregional Planning Process. Any changes to these hauling restrictions would have to be revisited by the South Chilcotin Planning Table.
- BC Parks will not upgrade and maintain the Industrial Corridor. Industrial users will be responsible for all maintenance and upgrades and will be issued a Park Use Permit for these activities.
- The Empire Valley Ranch Road, from the entrance to the Protected Area to the Empire Valley Ranch Headquarters itself, will be surveyed by the Ministry of Transportation and Highways and save and excepted from the Protected Area.
- De-gazette the 2.81 kilometers of the Blackdome Road that are currently managed as a section 4 road.
- Provide adequate signage on the Industrial Corridor to ensure users are aware of potential hazards. Signage should be completed in cooperation with users (i.e. Blackdome Mine, Forest Licensees and snowmobile groups).

*General Access*

- All roads other than the Empire Valley Road will be managed as Park Roads consistent with the *Environment and Land Use Act*.
- No new roads will be constructed in the Protected Area except those required for minor access to facilities.
- With the exception of the Empire Valley Road, the Industrial Corridor and the road on the west side of Goose Lakes, roads will not be upgraded, repaired or maintained except for the purpose of ranch operations.
- Aircraft landing will be restricted in the Protected Area consistent with wildlife objectives.
- Ensure that access management plans and forest development plans in the vicinity of the Protected Area include considerations for the protection of Protected Area values.
- Recreational snowmobiling is permitted only in the designated snowmobile corridors. See attached Access Management Map for corridor locations.

- Cougar, lynx and bobcat hunting with snowmobiles is permitted. *See section 4.5 - Recreation Management, for conditions.*
- All terrain vehicle (ATV) access is not permitted in the Protected Area. ATV and snowmobile use is only permitted for tenure management, Conservation Officers and Protected Area operations.
- The road to Fisheries Rock will be open from August 15 - September 15 for the purpose of traditional First Nations fishing.

*Access Management Strategy for North Churn*

- The road from the grasslands exclosure to the Gang Ranch private land will be temporarily closed due to a knapweed infestation and erosion problem. A gate will be installed west of the exclosure. The knapweed infestation will be addressed and waterbars installed. When erosion and knapweed are controlled, the road will be re-opened and the gate installed at the edge of the Gang Ranch private land.
- In the long term, the road across the grasslands on the east side of Goose Lakes will be deactivated. This deactivation is conditional upon the upgrade of the road on the west side of Goose Lakes.

**Map Eight:**
***Churn Creek Protected Area***
***Access Plan***
**Located in Appendix M: Map Folio**

## 4.7 Cultural Heritage

Churn Creek encompasses an area rich in cultural heritage and archaeological resources. First Nations use and habitation, a period of mining by Chinese and of course the ranching culture from the mid 1800's until present all contribute to the diverse history of the area.

The physical evidence of these various uses is distributed throughout the Protected Area, some of it buried and some of it is in plain view. Other indications of this history are only in the memories of elders or those that owned or worked in the area. All of these resources, aboriginal and non-aboriginal, historical and pre-historical, will be managed in a sensitive way and in accordance to the appropriate legislation. A more complete history of the Churn Creek Protected Area can be found in *Appendix F- History of the CCPA.*

Photo by Chris Hamilton

**Photo Twenty-one. One of the major First Nations winter village sites in the Churn Creek Protected Area.**

### Objectives

- Protect and preserve archaeological values and resources within the Protected Area.
- Protect and maintain the most important historical structures within the Protected Area.

- Increase archaeological, cultural heritage and historic knowledge relating to the Protected Area.
- Work in cooperation with community or special interest groups who have an interest in maintaining heritage values in the Protected Area.
- To raise awareness of First Nations interests and values as they pertain to the Churn Creek Protected Area.
- To provide for the continued exercise of any aboriginal rights that may exist.

## Strategies

- Archaeological and Traditional Use Impact Assessments (AIA's/TUIA's) required for all major developments, but not for minor developments. [16] The need for AIA's/TUIA's may not be required and the need to do so will be determined cooperatively by BC Parks and First Nations.
- Complete an Archaeological Overview Assessment and Traditional Use Study. This AOA/TUS would include mapping traditional use areas, mapping high, moderate and low potential areas, examining existing and proposed uses for potential impacts, and compiling anecdotal information from local First Nations' communities.
- Remove structures which pose public safety concern and which have no interpretive or ranch operations value
- Decisions regarding upgrade or removal of buildings currently in use will require an assessment of structural integrity, before renovations and operational costs can be determined. First priority will be to buildings currently used for ranch operations.
- Undertake a photo-inventory of all old buildings, heritage sites and archeological sites.
- Protect the integrity of gravesites in the Protected Area.
- Encourage continued investigation of non-native and early settlement history by historical organizations or individuals. Features may be loosely interpreted, for recreation and tourism purposes, without strict adherence to the historic accuracy required of a provincial heritage site.
- Undertake interpretation and/or investigation of First Nations heritage on the Churn Creek Protected Area only with participation of First Nations.

### Specific Historic Structures or Sites

1) Old Zimmerly Homestead - located on Grinder Creek, no remains evident.

[16] Major work includes new developments such as new water dugouts, new fences, new exclosures, new corrals, campsites, any new trails or new roads. Minor work is defined as maintenance to existing facilities, such as seeding and plowing fields, repairing existing gates and fences, repairs to septic systems, repairing irrigation ditches, installing signposts and installing gates/walkthroughs.

2) Log houses in Bishop Field - original cabins moved from the old ranch HQ for Sam Kenworthy and his wife in 1934.
3) Two story log barn in Bishop Field – remains of original Bishop Homestead.
4) Range cabin on Churn Flats - EVR range cabin.
5) Cabins on Fraser River at Fisheries Bar and at confluence of Fraser River and Grinder Creek date to turn of century. Suspected these were used by Chinese miners.
6) Ranch HQ - built 1951-52 by Jack and Henry Koster
7) Cabin at Hog Lake – no information.
8) Brown Ranch above BC Lake – suspected to have been built in 1920's.
9) Bishop Ranch at lot 311 – few remains. Old hayfield, still showing alfalfa and rock piles. Rhubarb plants and old root cellar are only physical remains.
10) Calving barns - built in the late 60's early 70's by Maytag.
11) Sheepherders cabin - dates back to Carson and Bryson prior to McEwens in 1890's.
12) Cabins at Two Cabin Lake – suspected they may date to McEwens time.
13) Original Zimmerly Homestead – located on south shore of Brown Lake.
14) Original Boyle Homestead – no remains; was sited on spring above Boyle Field.
15) Original schoolhouse – no remains. Located east of EVR Road adjacent to Browns Lake.
16) Original McEwan structures – oldest buildings in Protected Area, located adjacent to log house at lower Ranch Headquarters.

Photo by Bill Dennett, Vancouver Sun

**Photo Twenty-two: The Empire Valley branding crew in 1955. Johnny, Hector, Walter and Freddy Grinder, Louis Seymour, Slim Jepson and Herald Perkins. Photo courtesy of Henry Koster.**

## 4.8 Mineral Tenures

When Churn Creek was designated a Protected Area, existing mineral and placer tenures were respected so that the needs of the mining industry could be accommodated. As such, work on existing mining operations and claims is an acceptable land use within the Protected Area.

There are a number of different types of mining operations and tenures within and adjacent to the boundaries of the Protected Area. They include:

| Type of Tenure | Tenure Name or Number | Location of Tenure |
|---|---|---|
| Placer Claim | PAR # 1 (266444) | Upper Churn Creek |
| Placer Claim | PAR # 2 (266445) | Upper Churn Creek |
| Placer Claim | PAR (266446) | Churn Creek Delta |
| Placer Claim | PAR # 3 (266468) | Upper Churn Creek |
| Placer Claim | PC 25 (266421) | Churn Creek Delta (straddles Fraser River) |
| Placer Claim | PC 2 (266403) | Fraser River |
| Placer Lease | 266364 | Upper Churn Creek |
| Placer Lease | 266373 | Lone Cabin/Porcupine Creek |
| Placer Lease | 266363 | Upper Churn Creek |
| Placer Lease | Alessandro Garbin 315276 | Fraser River |
| Mining Lease | 24 (209455) | Perlite Mine |
| Mineral Claim | May #1 (208051) | Higgenbottom Valley |

The boundary of the Protected Area has been adjusted to exclude all placer claims and placer leases. These areas will be treated as normal Crown land inside the Protected Area. Proposed work programs will be referred to BC Parks by the Ministry of Energy and Mines for comments on any potential impact to adjoining Protected Area values. When placer claims or leases are forfeited, they become normal Crown land. See strategies below.

Portions of the two mineral tenures have been included in the boundary of the Protected Area but have been "Save and Excepted" from Protected Area status until the tenure holder forfeits the claim or lease. Work on the mineral claim or lease is allowed; subject to the *Mines Act*, and will be referred to BC Parks by the Ministry of Energy and Mines for comment on the impacts to Protected Area values. When the mineral claim or the mineral lease are forfeited, the portions of the tenure inside the boundary of the Protected Area will be automatically included in the Protected Area.

### Objectives

- Allow access to all mining tenures, subject to *Mines Act*.
- Minimize impacts of mineral development on Protected Area values.

## Strategies

- Work with Ministry of Energy and Mines and tenure holders to minimize impact of mineral exploration and development on Protected Area values through existing interagency referral process.
- Consider adding the land to the Protected Area when placer leases and claims are forfeited.

## 4.9 Tenures and Permits

The Churn Creek Protected Area has a number of tenures and permits that existed prior to Protected Area designation. These include two guide outfitter tenures, four *Range Act* agreements managed by the Ministry of Forests, a large number of Water Licenses, a bee-keeping operation, a number of mineral related tenures and two trapping tenures. In addition, there are four private land inholdings. Strategies for each of these uses can be found in different sections of this plan. The accompanying *Map Nine – Churn Creek Protected Area Tenures* shows where these tenures are located in the Protected Area.

*Guide Outfitting*

- Section 4.5 Recreation Management

*Trapping*

- Section 4.4 - Wildlife and Fish

*Mineral Tenures*

- Section 4.8 - Mineral Tenures

*Water Licenses*

- Section 4.2 - Ranch and Water Management

*Bee-Keeping*

- Section 4.2 - Ranch and Water Management

*Ranching*

- Section 4.2 - Ranch and Water Management

*Private Lands*

- Section 4.6 - Access Management

**Map Nine:**
***Churn Creek Protected Area***
***Tenures***
**Located in Appendix M: Map Folio**

# 5.0 COMMUNICATIONS

Marketing, promotion and interpretation of a protected area can affect the level of use and the type of visitor it attracts. Consequently, information and promotion strategies must be consistent with the objectives of the Protected Area.

The conservation values and the multiple use nature (including ranching, hay harvesting operations, and industrial corridors for logging and mining) of the Churn Creek Protected Area must be incorporated in information and marketing strategies. There are concerns that promoting the values or recreation opportunities could lead to significant increases in the number of visitors and have correspondingly negative affects on wildlife, grasslands and other Protected Area values. As well, visitors to the Protected Area should have a clear expectation of the types of opportunities, settings and constraints they will find when they arrive.

Churn Creek has a limited capacity for increased visitation. Consequently, care must be taken in the type of information program that is undertaken. Active advertising or promotion of values or activities is not appropriate for this Protected Area.

For the term of this plan, BC Parks will provide basic information about Churn Creek which describes public safety information and the conservation values in the area, and which enables users to protect these values during their visit.

Every effort should be made to ensure that there is consistency between any commercial recreation users and BC Parks with respect to the accuracy of information provided and the level of promotion.

## Objectives

- To ensure that published public information about Churn Creek is consistent with Protected Area vision and roles.
- To present the role of the Churn Creek Protected Area in conserving important grasslands and wildlife habitat and populations in the British Columbia Protected Area system.
- To present the Protected Area as showing ranching, recreation and grasslands conservation as compatible activities.
- To provide accurate and appropriate information for low use and low impact recreation.
- To encourage visitor appreciation and understanding of the natural, cultural and multiple use values of the Protected Area.

## Strategies

- Create an information brochure. The focus of the brochure and its limits of distribution will avoid encouraging increased use.
- Develop interpretive themes for the Protected Area that focus on its contributions to the Protected Area system, its history, First Nations values, the multiple use nature of the area, conservation values, protection of natural resources and safety.
- Provide basic levels of interpretative signage in the Protected Area, working with First Nations and stakeholders where appropriate.
- Work with government agencies, commercial operators and tourism associations or groups to portray the Protected Area in a manner that does not encourage increased visitation.
- Do not actively promote or market the Protected Area.
- Create and maintain a webpage on the official BC Parks website with the same purpose as the brochure.

Photo courtesy Henry Koster

**Photo Twenty-three: Hay crews working. Circa 1930's.**

# 6.0 MONITORING STRATEGY

Monitoring the continued recovery of the grasslands in the Churn Creek Protected Area is a significant component of this management plan. The monitoring program should build on the Ministry of Forests' Range Reference Program. The Ministry of Forests has established a number of exclosures and photopoints across the Protected Area.

## Objectives

- Monitor seral condition trends of the principal ecosystem groups identified in *Appendix K – Current Condition of Principal Ecosystem Units by Biogeoclimatic subzone.* Special attention will be given to ecosystems which currently do not meet seral stage objectives or are of special value as wildlife habitat.
- Assess seral condition trends for each biogeoclimatic unit based on a summary of trends for principal ecosystem groups.
- Compare seral condition trends on sites grazed and not grazed by livestock and on sites heavily and lightly used by wildlife.
- Monitor the site-specific recovery of selected important habitats such as riparian ecosystems and small aspen stands.
- Monitor site-specific changes in the incidence and extent of noxious weeds.
- Monitor effectiveness of measures to control forest encroachment of grasslands.
- Monitor percentages of non-native species across all seral stages.

## Strategy

Monitoring will be based on periodic reassessments, both site specific and extensive. Site specific monitoring will include detailed plot measurements within range exclosures and other fenced areas and repeat photographs at photopoints.

Extensive monitoring will include seral condition estimates over relatively large areas, similar in detail to those described in section *4.1 – Grasslands Restoration and Management*. Extensive monitoring will assess general trends in grassland condition across the Protected Area and place the site specific monitoring in the context of these general trends. It will also provide estimated trends for ecosystems that do not have site-specific monitoring.

### Site Specific Monitoring

**1. Existing range exclosures.**

Existing Ministry of Forests range exclosures are located on Airport Flats, McGee Flats, Wycott Flats, Sheep Point, Hartman Pasture (2) and Eagle Tree (2). The exclosures are

located in representative areas and exclude livestock grazing within a fenced area of approximately 1 ha. Monitoring will be based on periodic reassessments of vegetation within the exclosure and immediately outside of it to document seral stage recovery in the absence and presence of livestock grazing.

**2. New range exclosures**

Additional range exclosures will be located on Alkali Flats, Churn Flats, New Pasture, and Fraser South Range Units. Over time and as resources are available, additional exclosure may be located in other areas. The new exclosures will be monitored in the same manner as the existing exclosures.

**3. Existing photopoints**

Existing photopoints will be identified on maps and on-the-ground. New photographs, with a scale and composition similar to the existing photographs, will be periodically taken at each existing photopoint. Comparisons of photographs taken over time will visually document vegetation changes.

**4. New photopoints**

New photopoints will be established in selected riparian areas and aspen groves. A comparison of photographs taken over time will visually document vegetation changes associated with range management practices.

**5. Benchmark Areas.**

Benchmark Areas will be an important part of the monitoring program. They will provide reference areas, with a diversity of contiguous ecosystems, against which to evaluate trends on grazed areas. Over the long-term, they will also provide a benchmark for describing the characteristic of grassland ecosystems which have little or no impact from domestic livestock, but which may have impacts from wildlife. *See Section 7.0 Benchmark Areas* for details and strategies.

**6. Additional fenced areas.**

In addition to the range exclosures described above, fences to exclude livestock grazing are currently in place or will be built at Onion Lake, Coffeestain Lake, and Two Cabin Lake. These exclosures are primarily to monitor riparian vegetation development on areas heavily impacted in the past by livestock. Access for livestock watering will be provided.

**7. Monitoring Plots.**

Monitoring plots and transects will be established to examine species composition and the presence of non-native species.

**Extensive Monitoring**

Reconnaissance surveys of the principal ecosystems identified in Section 4.1 will be used to periodically estimate the proportion of each seral stage in each principal ecosystem. Comparison of estimated proportions over time will document major changes in grassland seral

condition. Special attention will be given to ecosystems currently not meeting seral stage objectives.

# 7.0 BENCHMARK AREAS

The Churn Creek Protected Area offers a significant opportunity to learn more about how grassland ecosystems function. One of the key tools that will be used to monitor larger grassland ecosystems is a number of grassland Benchmark Areas. These Benchmark Areas will be designated as a Special Feature Zone and will be managed as natural areas without cattle grazing, horse use or recreation activities. It is expected that naturally occurring primary grazers such as sheep and deer will continue to use these areas.

## Criteria

The following criteria were used to identify Benchmark Areas:

1. Negligible impacts on ranching operation, including both cattle movement and important areas for grazing.
2. Representation of all three grassland biogeoclimatic subzones (Upper, Middle and Lower Grasslands); representative site series within these biogeoclimatic subzones; and transition areas between biogeoclimatic subzones.
3. Minimal use of fencing.
4. Areas with climax or late seral stage plant communities.

## Objectives

- Determining Potential Natural Community in the absence of cattle grazing (larger benchmarks contain less edge and a larger variety of plant communities than smaller exclosures).
- Increase understanding of grassland ecosystem processes in absence of cattle grazing. Some of these processes include grassland succession; wildlife use (both large and small mammals, invertebrates and birds); lichen colonization and growth; soil biology, including the accumulation of litter and development of microorganisms such as fungi and mycorhizia in soil.

## Strategies for Benchmark Areas

- Hunting is permitted in all three benchmarks.
- No overnight camping in any of the benchmarks.
- Recreational use will not be encouraged in the benchmarks.
- High Lake and West Churn benchmarks are closed to horseback riding.

- The trail through the Clyde Mountain benchmark will be opened to recreational, not commercial horseback riding. Signs will indicate the purpose and sensitivity of the benchmark and will ask riders to stay on the trail. If impacts to the grasslands are identified, or if riders are not staying on the trail, the area may be closed.

## 1. High Lake

This small benchmark is focused on High Lake, the highest elevation kettle lake in the Protected Area. Key features include:

- Small kettle lake with well-developed riparian edge.
- Relatively small at 72 hectares.
- Upper Grasslands, primarily in late seral stage.
- Wide variety of diverse ecosystems associated with IDFxm, including timbered edges, moist swales, ridges, meadows, kettle lakes and mature Douglas-fir. Some encroachment. Represents a continuum from wet to dry site series.
- Natural ecological boundaries.
- No natural barriers to cattle, will require complete fencing.

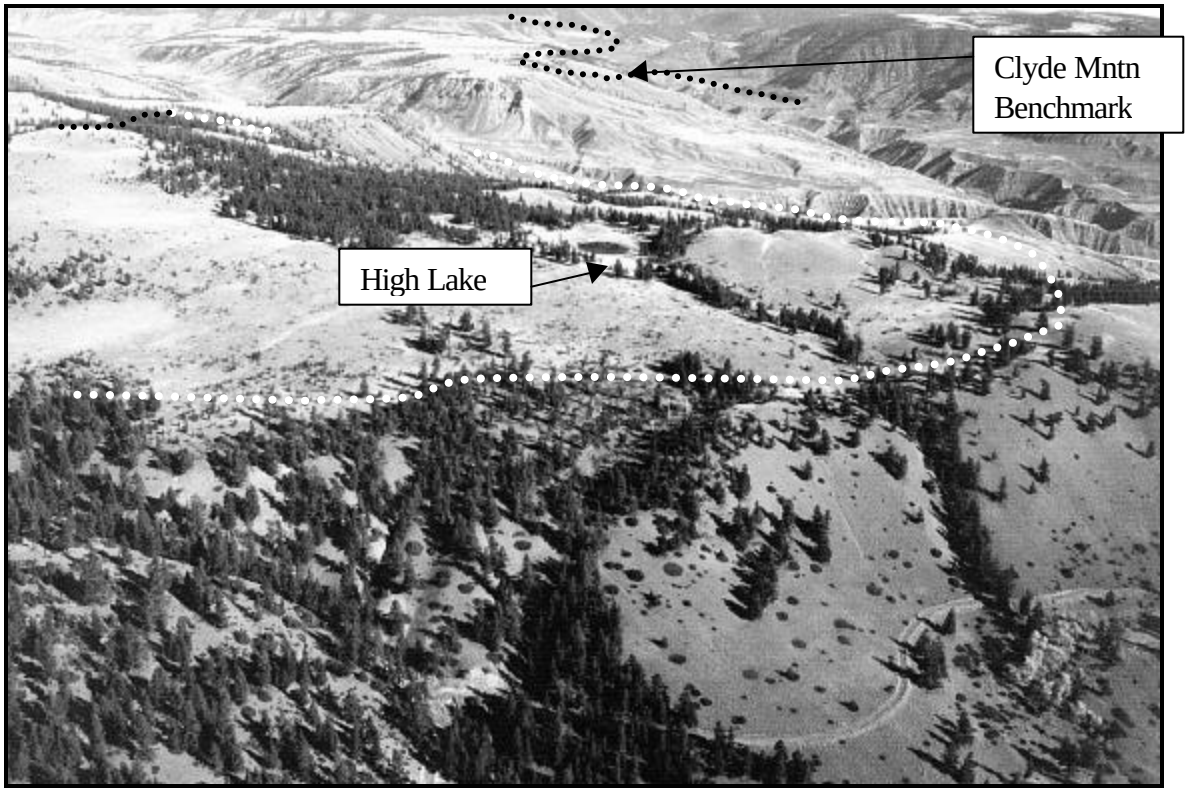



Photo by Ordell Steen

**Photo Twenty-four. Portions of the High Lake Benchmark can be seen surrounded by the white dotted line. Portions of the Clyde Mountain Benchmark are shown by the black dotted line in the background.**

## 2. East Clyde Mountain

The East Clyde Mountain Benchmark Area is a large and very diverse area stretching from the lower grasslands along the Fraser River to the Middle Grassland benches and the Upper Grasslands of Clyde Mountain. Key features include:

- Full transition from Lower to Upper Grasslands. Highest elevation grasslands in Protected Area. Grasses range from mid-climax to full climax on steeper slopes. Some areas are early to mid seral due to sheep use.
- 957 hectares, of which 150 hectares are on benches and top of Clyde.
- Habitats for a large number of red and blue listed species, including critical lambing areas for California bighorn sheep, Flammulated owls, Lewis's woodpeckers, and Long-billed curlews.
- Selectively logged areas represent opportunities for research.
- Fencing minimized by natural barriers and existing fences.
- Contains a variety of ecosystems, including forested areas, timbered edges, springs, benches, and a wide variety of aspects. Some encroachment.

Photo by Chris Hamilton

**Photo Twenty-four. Looking north along the Lower Grassland benches of the Clyde Mountain Benchmark Area.**

## 3. West Churn Flats

This medium sized Benchmark Area is located at the extreme west end of Churn Creek Flats, capturing a small mesa naturally separated from the rest of the flats by a gully, and a number of large grassy "slump terrain" areas. It also includes the area from the breaks north to Churn Creek. Key features include:

- Primarily Middle Grasslands, with most areas in full climax, with the exception of areas adjacent to sheep escape terrain.
- 382 hectares, of which 35 hectares are on Churn Flats
- Ecological diversity is high, including all aspects, riparian, forested, aspen copses, creek, benchlands, moist swales, steep breaks and meadows.
- Natural barriers mean minimal fencing.
- Critically important winter range for the Yalakom Mountain/Churn Flats migratory California bighorn sheep herd.

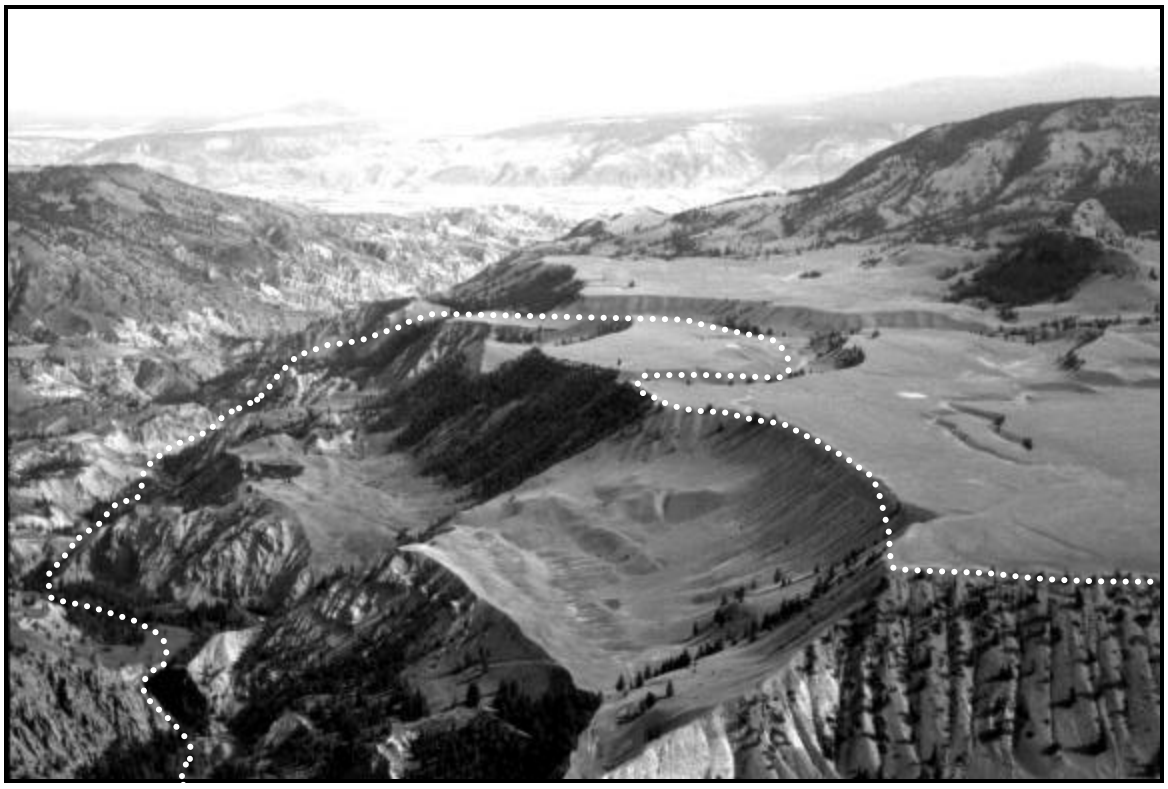


Photo by Chris Hamilton

**Photo Twenty-five: Looking east along a portion of the West Churn Benchmark Area. The Benchmark Area is located within the dotted line.**

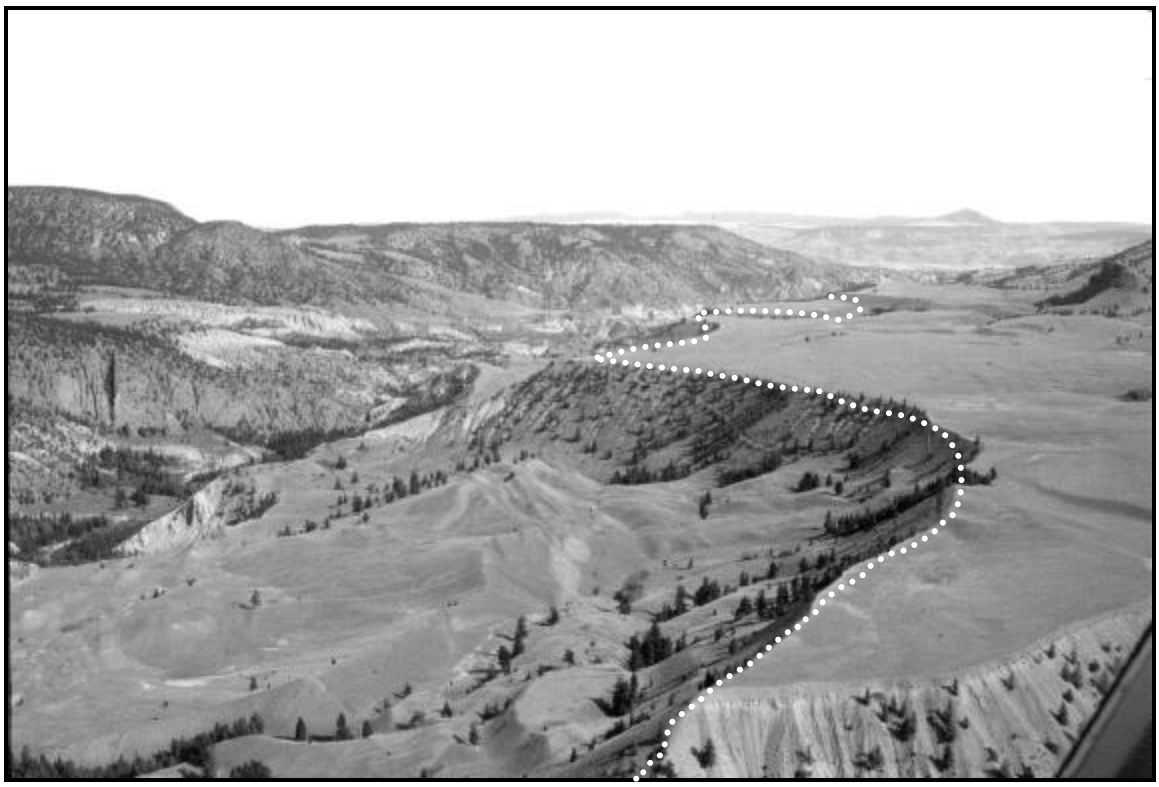


Photo by Chris Hamilton

**Photo Twenty-six: Another photograph of the West Churn Benchmark Area. The Benchmark Area is located to the left of the dotted line and stops at Churn Creek.**

# 8.0 PLAN IMPLEMENTATION

Implementation of actions in this management plan is dependent upon the availability of staff and resources within BC Parks and the Ministry of Forests. Approval of this management plan will not constitute automatic approval of funding for implementation.

Timeframe indicates when action is initiated. An asterix (*) means the action is ongoing.

## Immediate (1-2 Years)

### *Conservation Program*

- Continue taking photographs at existing photopoints.*
- Establish new photopoints at important areas. Section 4.1 provides direction on areas to be photomonitored.
- Map occurrences of noxious weeds. Complete reconnaissance level mapping for areas that are not currently inventoried for noxious weeds.
- Develop annual weed management priorities with other agencies with a weed management mandate, including Ministry of Forests, Ministry of Agriculture and the Ministry of Transportation and Highways.*
- Make a concerted effort to eliminate invasive noxious weeds, including blueweed, spotted knapweed, diffuse knapweed and leafy spurge.*
- Establish wildlife population census areas in the Protected Area and ensure long-term monitoring..

### *Planning Program*

- Ensure that access management plans and forest development plans in the vicinity of the protected area include considerations for the protection of protected area values.*

### *Recreation Program*

- Offer a long-term proposal for the ranching/hay operation opportunity.
- Upgrade existing dams and diversion structures to provincial standards.
- Ensure access management is advertised with appropriate signage
- Sign the industrial corridor to ensure users are aware of potential hazards. Signage should be completed in cooperation with industrial users i.e. Blackdome Mine and Forest Licensees.

- Sign the trail through the Clyde Mountain benchmark.
- Develop a staging area for horseback riders and other Protected Area users. This area should be located in the vicinity of the Calving Barn in the Intensive Use/Recreation Zone.
- Review any maintenance work to the industrial corridor and issue Park Use Permits to users of the industrial corridor. *
- Provide a small interpretive site and parking lot adjacent to the Empire Valley Ranch headquarters.
- Authorize, by Park Use Permit, pre-existing operations (guide-outfitting, bee-keeping, trapping, commercial recreation, etc).
- Remove structures with public safety concerns and no interpretive or ranch operations value.

### *Extension Program*

- Develop interpretive themes for the Protected Area that focus on its contributions to the Protected Area system, its history, First Nations values, the multiple use nature of the area, conservation values, protection of natural resources and safety.
- Provide basic levels of interpretative signage in the Protected Area, working with First Nations and stakeholders where appropriate.
- Create an information brochure. The focus of the brochure and its limits of distribution will avoid encouraging increased use.
- Create and maintain a webpage with the same purpose as the brochure.

## Short Term (2-5 Years)

### *Conservation Program*

- Develop a long-term management plan for wildlife with Wildlife Branch, BC Parks, Ministry of Forests and First Nations.
- Complete fish and fish habitat overview inventory on Grinder and Koster Systems.
- Prepare a fire management plan. Detailed criteria on how this fire management plan should be prepared can be found in *Appendix C: Criteria for Fire Management Plan*.
- Fence Benchmark Areas.
- Fence Onion Lake, Coffee Lake, and Two Cabin Lake.
- Undertake a photo-inventory of all old buildings, heritage sites and archeological sites.
- Screen irrigation inputs (culverts, dams and irrigation ditches) where fish are present.

- Locate new exclosures on Alkali Flats, Churn Flats, New Pasture, and Fraser South range units.

### *Planning Program*

- Examine existing water licenses to ensure they are necessary.
- Work with Ministry of Energy and Mines and tenure holders to minimize impact of mineral exploration and development on protected area values through existing interagency referral process.*
- Consider adding the lands to the Protected Area when placer leases and claims are forfeited.*
- Complete an Archaeological Overview Assessment and Traditional Use Study.
- Save and Except the Empire Valley Ranch Road from the Protected Area.
- De-gazette the 2.81 kilometers of the Blackdome Road.

### *Extension Program*

- Work with government agencies, commercial operators and tourism associations or groups to portray the Protected Area in a manner that does not encourage increased visitation.*
- Encourage continued investigation of non-native and early settlement history by historical organizations or individuals.*
- Undertake interpretation and/or investigation of First Nations heritage on the Churn Creek Protected Area only with participation of First Nations.*

### *Recreation Program*

- Monitor snowmobile use (cougar, lynx and bobcat hunters) of the Protected Area for impact to grasslands.*
- Monitor impacts and levels of horse use.*
- Monitor impacts and levels of other recreational use (mountain bikes, hiking etc).*
- Monitor primitive camping in the Natural Environment Zone and identify environmentally sensitive sites where overnight use will not take place. Monitor use and impacts.*
- Monitor the effects of commercial recreation use and adjust Park Use Permits where need is demonstrated to control environmental impacts from concentrated visitor use.*

## Longer Term (6+ years)

### *Conservation Program*

- Complete reconnaissance surveys of the principal ecosystems identified in Section 4.1 every ten years to estimate the proportion of each seral stage in each principal ecosystem.

### *Recreation Program*

- A campground will be developed when use levels warrant.
- Open the road to Wycott Flats when erosion and knapweed are controlled.
- The road across the grasslands on the East Side of Goose Lakes will be deactivated. This deactivation is conditional upon the upgrade of the road on the West Side of Goose Lakes.

### *Planning Program*

- Undertake formal review of the Management Plan after ten years.

## Future Role of the Local Advisory Group

BC Parks acknowledges the important role of the Local Advisory Group in helping to determine the long-term vision for the Churn Creek Protected Area and providing the mechanics of how that vision will be implemented over time.

The Local Advisory Group will be invited to meet once a year to discuss and review the ongoing implementation of the Management Plan. BC Parks will keep a mailing list of LAG members. In the interest of costs and efficiencies, members who are not participating may be deleted from the list over time. A letter asking if the member is still interested in receiving information will be sent prior to that person being removed from the list.

New members may be added to the LAG.

# 9.0 SUMMARY OF PROTECTED AREA ACTIVITIES

The following table provides an overview of the management of specific activities within the Churn Creek Protected Area. It utilizes three categories for permitted, restricted and not permitted activities.

## 9.1 Permitted Activities

*Activities that are allowed under normal management guidelines and are governed by relevant provincial legislation and regulations.*

| Activity | Comment/Rationale |
|---|---|
| Game Guiding | ♦ Pre-existing operations continue at current levels under Park Use Permit.<br>♦ Managed in conjunction with BC Environment |
| Hunting | ♦ Regulated in conjunction with BC Environment.<br>♦ Native hunting rights not affected .<br>♦ Mix of Motorized and Non-motorized hunting access determined by Zone. |
| Trapping | ♦ Pre-existing licensed operations continue at current levels under Park Use Permit.<br>♦ Managed in conjunction with BC Environment. |
| Non-Mechanized Recreation | ♦ Non-commercial, public recreation that does not rely on machines or engines, including hiking and cross-country skiing. |
| Primitive Camping | ♦ No permanent facilities or sites except where required to protect resources due to concentrated use.<br>♦ Pack-in / pack-out policy.<br>♦ Monitored for impacts; sensitive sites avoided. |
| Horseback Riding | ♦ Non-commercial, personal use; generally intermittent and for pleasure or hunting.<br>♦ Pack own pellet feed due to shortage of forage for non-wildlife uses.<br>♦ Monitor for impacts.<br>♦ Groups of 12 or more use trails |
| Aboriginal Uses | ♦ Managed consistent with BC Government policy. Allow for the continued exercise of aboriginal rights that may exist in accordance with the law. |

## 9.2 Restricted Activities

Activities that may be permitted under stricter than normal management guidelines in the Protected Area.

| Activity | Comment / Rationale |
|---|---|
| Mountain Biking | ♦ Restricted to existing roads and trails.<br>♦ Monitored for potential impacts. |
| Commercial Horse Use | ♦ Primarily day use; authorize pre-existing operations.<br>♦ Confined to designated trails and roads. |
| Habitat Restoration | ♦ Controlled burning is permitted, subject to the conservation of Protected Area values and consistent with ecosystem protection roles. |
| Commercial ATV Use | ♦ By permit only for ranch operations, trapline management, Conservation Officers or Protected Area management activities. |
| Fire Management | ♦ Subject to the terms of fire management plan. Initial attack in interim<br>♦ Prescribed fire permitted. |
| Forest Health and Pest Management | ♦ Where possible, naturally occurring infestations will run their course.<br>♦ Control actions integrated with those of the MoF will be considered where insect infestations in the Protected Area threaten adjacent resources.<br>♦ Pest management decisions will be site-specific. |
| Angling | ♦ Few fish resources in PA.<br>♦ No fisheries enhancement.<br>♦ No launching of motorboats in the Protected Area. |
| Aircraft Access | ♦ Aircraft landing restricted to ranch operations and Protected Area management activities, including enforcement, public safety and fire fighting. Landings restricted to designated areas. |
| Chemicals and biocontrols for noxious weed control | ♦ Spot applications only<br>♦ Weeds one the largest risks to grasslands. |
| Scientific Study | ♦ Non-destructive study consistent with protected area management objectives.<br>♦ Permanent research facilities such as camps or stations will not be permitted. |

| Activity | Comment / Rationale |
|---|---|
| Cougar, Lynx and Bobcat hunting with snowmobiles | ♦ Managed in conjunction with BC Environment and subject to hunting regulations<br>♦ Restricted to existing roads and trails; snowmobiles not permitted on grasslands |
| Snowmobiling | ♦ Restricted to routes identified in access management strategy |
| Commercial Backcountry Camps | ♦ No permanent structures or facilities.<br>♦ Wilderness style camps.<br>♦ Pack-in / pack-out policy. |

## 9.3 Activities That Are Not Permitted

Activities that are not permitted by law within the Protected Area, or are considered incompatible with the management objectives for Churn Creek.

| Activity | Comment / Rationale |
|---|---|
| All-terrain vehicles | ♦ Potential impacts on grasslands and wildlife.<br>♦ Inconsistent with *Park Act Regulations*.<br>♦ Not a pre-existing use in Protected Area. |
| Commercial Jet Boating | ♦ Not considered appropriate given high archaeological values and sheep escape terrain on Fraser River Breaks. |
| Commercial Rafting | ♦ Not considered appropriate given high archaeological values and sheep escape terrain on Fraser River Breaks. |
| Road Construction | ♦ No new roads.<br>♦ Existing roads not maintained.<br>♦ Except for minor access to facilities. |
| Mineral Exploration and Development | ♦ Incompatible with management objectives and contrary to Order-In Council. |
| Timber Extraction | ♦ Incompatible with management objectives and contrary to Order-In Council. |

# Appendix A: Critical Habitats in the Churn Creek Protected Area

## Method

*Map Ten – CCPA Critical Habitats* represents potentially critical habitats for red and blue listed vertebrate species known or suspected to occur in the Churn Creek Protected Area. Background information, objectives and strategies for California bighorn sheep, an important blue listed species in Churn Creek, can be found in *Section 4.4 – Wildlife and Fish*.

For the purposes of this map, a critical habitat is defined as "a habitat essential for a species to meet one or more of its life requisites, or a habitat in which the behavior of an animal makes it susceptible to disturbance."

This map was generated from the following sources of information:

- wildlife inventory information and Terrestrial Ecosystem Mapping
- field observations of several biologists
- extrapolation from known distributions
- habitat use information from various studies

Detailed methodologies and sources of information can be obtained from BC Parks in the report *Churn Creek Protected Areas Critical Habitat Maps.*

Many of the habitats outlined on these maps, particularly riparian habitats, also represent important habitats for numerous other species and are significant centers of diversity within the grassland environment.

This map reflects current states of knowledge and will be updated regularly or as new inventory and observation information becomes available.

The categories of occurrence of red and blue listed species which were used are : known, suspected and possible. "Known" species are those which have been observed in the Churn Creek Protected Area. "Suspected" species are those which are likely to occur in the CCPA based on known distributions of the species. "Possible" species are those that could potentially occur in the CCPA but are less likely.

Areas that appeared to contain the appropriate elements to be a critical habitat for one or more red and blue listed species were delineated as polygons. Each polygon that was delineated was numbered and the following information was recorded for each polygon in a digital database: biogeoclimatic subzone, range unit, habitat type, each potential red or blue listed species that

may occur in the polygon, occurrence (known suspected or possible) habitat use for each species, management implications, present condition of the habitat (if known) and comments.

For presentation purposes, the habitat types were grouped into the following broad categories: riparian, grassland, forest and other[17].

## Red and Blue Listed Species and Management Objectives by Broad Habitat Type

### Forest

Douglas-fir slopes and adjacent ridgelines above grasslands along the major valleys (Fraser, Churn, Lone Cabin) provide important nesting and foraging habitat for **Flammulated owls** and foraging habitat for **Townsend's Big-eared Bats**. The continuous areas of mature forest need to be conserved, particularly the large diameter trees and snags within them and will have to be carefully considered in prescribed burn plans.

Both aspen copses and aspen forest provide critical habitat for a wide range of red and blue listed species. Bats such as **Townsends Big-eared Bats, Fringed Myotis, Western Small-footed Myotis** and **Spotted Bat** and snakes such as **Gopher Snakes, Racers and Rubber Boas** use these forests for foraging. Additionally, **Sharp-tailed Grouse** likely use many of these areas for nesting and for shelter and food in winter. In all cases, these forests need to be managed to maintain the deciduous cover and to maintain or restore the shrubby understories.

### Grassland

Within the Lower Grasslands, areas with dense, tall sagebrush are likely used by **Western Small-footed Myotis** bats for feeding and by **Brewers' Sparrows** for nesting and foraging. If these sagebrush areas are considered for prescribed burns, they should only be burned in such a way that the sagebrush is not killed.

Also within the Lower Grasslands, areas of grasslands with scattered Douglas-fir and Ponderosa Pine trees are used by **Lewis' woodpeckers** for nesting and feeding. Prescribed burns should avoid consuming nest trees but may be used beneficially to create new nesting snags.

Within the Upper Grasslands, there are several large, level areas of continuous grassland that potentially are used or were used by **Long-billed Curlews** for nesting and feeding and provide

[17] Riparian includes open water, open water (marsh), riparian, riparian (marsh), riparian + vernal ponds, shrubland + vernal ponds, and vernal ponds. Grasslands include grassland and very open forest. Forest includes aspen copses, aspen forests, Douglas-fir crest of hill, Douglas-fir slope, Douglas-fir slope and base of hill. Douglas-fir slope and crest of hill. Other includes buildings, cultivated fields, cliff or talus, rock, cliff or talus with scattered Douglas-fir.

foraging areas for **Rubber Boas** and **Short-eared owls**. If **Curlews** are found nesting, grazing should continue at other times of the year to maintain low-profile grass.

**Riparian**

Riparian areas, particularly those within the grasslands, provide some of the most critical habitats for a wide range of species.

Within the grasslands, riparian areas with vernal ponds potentially provide critical breeding habitat for **Great Basin Spadefoot toads**. Cattle need to be managed to minimize foreshore trampling on these ponds.

Shrubby and deciduous riparian areas within the grasslands are important foraging habitats for numerous bats (**Spotted Bat, Townsend's Big-eared Bat, Western Small-footed Myotis, Fringed Myotis**) snakes (**Rubber Boa, Racer, and Gopher Snake**) and birds (**Yellow-breasted Chat, Sharp-tailed Grouse** and **Lewis' Woodpecker**). Many of these areas also potentially provide nesting areas for **Yellow-breasted Chats** and **Sharp-tailed Grouse**. Those with large cottonwood trees are extremely important nesting areas for **Lewis' woodpeckers**. All of these riparian areas should be managed to maintain or enhance the shrubby vegetation and to maintain the deciduous overstorey (when present). If any **Yellow-breasted Chats** are found nesting, human and cattle disturbance should be avoided in that area.

Open water (lakes and permanent ponds) within the grassland environment provide important watering sites for bats (as listed above) and important hunting sites for raptors such as **Gyrfalcons, Prairie Falcons** and **Northern Goshawks** as well as snakes. Water quality, aquatic vegetation and emergent vegetation such as rushes and sedges should be maintained to provide duck nesting and foraging habitat (prey items for raptors).

**Other**

Cliffs provide potential nesting sites for **Prairie Falcons** and **White-throated Swifts** as well as roosts for bats (**Spotted Bat, Townsend's Big-eared Bat, Western Small-footed Myotis,** and **Fringed Myotis**). Talus and rock may be used by snakes **(Rubber Boa, Racer and Gopher Snakes**) for foraging, hibernating and denning. Generally, these sites have few management implications except to avoid disturbing **Prairie Falcon** nesting sites.

Old buildings in the grasslands are important roosting sites for many bats **(Spotted Bat, Townsend's Big-eared Bat, Western Small-footed Myotis, Fringed Myotis**) and should not be destroyed.

Cultivated fields may potentially provide nesting and foraging habitats for **Bobolinks** and early spring feeding sites for **Long-billed Curlews**. If any **Bobolinks** are found nesting, haying should be delayed in that area until mid-July (or longer if necessary) for that year to allow the young to fledge. The area should be watched the next year to see if any **Bobolinks** return to the site.

# Map Ten:
## *Churn Creek Protected Area*
## *Critical Habitats*
**Located in Appendix M: Map Folio**

# Appendix B: High Priority Encroached Areas

## Introduction

*Map Eleven – High Priority Encroached Areas* represents recent encroachment in the Churn Creek Protected Area. For the purposes of this project, "recent encroachment" is defined as areas where trees are growing on what was formerly pure grassland vegetation but the area is still dominated by grassland vegetation.

## Method

The encroachment map was prepared from Terrestrial Ecosystem Mapping (TEM) for the Dog Creek and Churn Creek Study areas. The TEM process indicated areas of recent encroachment. 1:15,000 scale airphotos (dated 1992 and 1993) were used to verify encroachment areas on the TEM maps. Acetate overlays were laid on the TEM base maps and the photo-verified encroachment areas were drawn in red pen on the acetate and later digitized. The results are shown on the accompanying map.

## Summary and Uses

The map represents recent areas of encroachment that can be used as first priorities for areas needing encroachment management in the Protected Area. There are limitations to the map. The use of early 1990's airphotos means that areas of the most recent encroachment may have been missed. Also, areas of very recent encroachment consisting of small, scattered trees are not visible on 1:15,000 colour airphotos.

The primary use of the map is to determine priorities for mechanical removal of encroachment. A more thorough study should be undertaken prior to the preparation of a comprehensive fire management plan for the Protected Area.

**Map Eleven:**
***Churn Creek Protected Area***
***High Priority Encroached Areas***
**Located in Appendix M: Map Folio**

# Appendix C: Criteria for Fire Management Plan

Prescribed fire is a tool that will be used to meet the habitat and vegetation management objectives of the Protected Area Management Plan. Habitat and vegetation management objectives must be clearly identified and spatially located in order to develop and implement an effective fire management plan (FMP).

The first step in developing an FMP is to develop an understanding of historical fire and climate patterns within each biogeoclimatic subzone in the Protected Area. The following studies are needed to gather this information:

- analysis of fire-scarred trees to determine frequency, intensity, seasonality and extent of historic fires
- determine historic climate cycles (including drought cycles) using dendroclimatology techniques to help determine ecosystem structural and compositional change over time
- document the fire ecology and fire effects (including fire adaptations) of species of interest in the protected area

Fire can be used to meet a number of management objectives. These objectives are outlined below, along with the inventory work needed before a Fire Management Plan can be completed.

**Objectives**

1) Reduction of conifer encroachment and ingrowth

- Measure, document and explain the departure of current forest structure and extent from the historical pattern. Compare historic and contemporary aerial photography, and measure encroachment characteristics on the ground (age-class, stand density, diameter distribution). Map the current and historical extent of conifer forests and determine the objectives for forest extent and structure, and prioritize areas for encroachment and in-growth removal (by fire or other means i.e. mechanical removal)
- Map the major waves of encroachment based on current structure (i.e., age, height, diameter, crown characteristics, etc.)
- Determine historic cycles of growing season precipitation to help explain encroachment patterns (in conjunction with fire-frequency work noted above)
- Determine specific spatial and structure targets for the management of coniferous forest cover
- Determine a realistic schedule for meeting these targets
- Determine what other tools can be used in conjunction with fire to meet these targets
- Prioritize areas for encroachment and in-growth removal

2) Maintain/enhance red and blue listed species habitat

- Determine the effect of fire on critical habitats for red- and blue-listed species using the fire effects and fire ecology information gathered
- Indicate critical habitat areas that would be adversely affected by prescribed burning on the critical habitat map
- Indicate areas that could be positively affected by prescribed burning on the critical habitat map
- Determine the season, timing and type of fire that would be consistent with habitat maintenance/enhancement for each habitat type
- Habitat capability/suitability theme maps should be prepared for each species of interest using the critical habitat maps (with further ground-truthing where necessary). Develop maintenance prescriptions for appropriate areas taking into account species life histories, habitat requirements and habitat structure data. Prior to undertaking habitat enhancement, it must be determined what historical habitat structures existed to decide where enhancement is appropriate.
- Determine a realistic schedule for meeting the objective
- Prioritize areas for habitat maintenance and enhancement

3) Maintain/enhance habitat for California bighorn sheep, Mule deer and other wildlife habitat

- Determine the location, extent, and successional stage proportions of habitat required
- Determine management techniques to meet these targets
- Determine a realistic schedule to meet the targets
- Split out areas of habitat maintenance from habitat enhancement. Special attention should be given to ungulate/livestock grazing conflicts. Follow the same format as in #2.

4) Control of noxious weeds

- Map occurrences
- Prioritize occurrence sites for control
- Determine methods of controlling/removing weed infestations
- Determine a realistic schedule for meeting the objective
- Plant physiology data will provide the technical detail for writing control prescriptions, the scale of control is constrained by where it occurs and the need to mesh this objective with others

Once these data needs have been mapped and described, a prescribed fire management plan can be developed. All objectives will be overlapped and we will try to meet as many objectives as possible without adversely affecting any one objective, while also considering the implications for areas adjacent to the protected area. In this system prescribed fire is not an objective but a tool to meet one or more objectives.

# Appendix D: Innovative Range Management Techniques

This appendix will provide a menu of range management practices and developments that will be used to achieve the strategies outlined *in Section 4.1 – Grassland Restoration and Management*. This appendix will not attempt to provide the reader with a brief lesson in range management, but will discuss some of the tools to be used by the Ministry of Forests in achieving grassland goals in the Churn Creek Protected Area.

## I. Stocking Rates.

Selection of the correct stocking rate is the most important of all grazing management decisions from the standpoint of vegetation, livestock, wildlife, and economic return. The Society for Range Management defines stocking rate as "The number of specific kinds and classes of animals grazing or utilizing a unit of land for a specified time period." It is normally expressed as area of land per animal unit month. In the case of beef cattle an animal unit is consider to be a 454 kg cow with or without a suckling calf at foot.

Appendix E of this plan gives a detailed report of stocking rates and a justification for them relative to the Cariboo-Chilcotin Land-Use plan and proposed use levels.

Historic use of the ranch was 1000 to 1500 cows plus breeding heifers. For many years the ranch also grazed over 100 head of horses through the winter months. The proposed initial stocking rate of 525 cows including bulls is a conservative figure which will provide for a maximum rate of recovery on depleted range sites, while providing an economically viable situation for a ranch operator. The maximum allowed under the plan will be 700 cow/calves including bulls.

## II. Livestock Distribution.

The rangelands of the Churn Creek Protected area are a diverse mix of topography, vegetation types, seral stages and water availability. All of these factors combine to create a situation where livestock graze preferred sites and tend to leave less preferred areas without use. Range condition on heavier used preferred sites can be improved by managing livestock away from these areas by various means such as:

### 1. Water Development

The Empire Valley portion of the Churn Creek Protected Area has many lightly used or non-used sites that could be grazed with the development of livestock watering sites. These can include wells, dugouts, waterlines, to water troughs from existing water sources and spring development. Water development can also protect riparian areas from over use and trampling by livestock, by providing alternate water sources.

Providing stock water in less preferred areas will reduce grazing pressure in preferred sites and may allow improvement in range conditions.

2. Salting Practices

Salt should be placed in locations that will encourage greater use of less preferred grazing areas. Salt should also be removed from an area when planned use has been achieved.

On adequately watered sites that receive little or no use, salt can be placed near water to establish use of the area. Salt locations must then be moved when stock use becomes established.

Cattle should be "salt hungry" when moving to a new pasture or grazing area. Salt can then be used to promote use in less preferred sites.

3. Herding

Because of the diverse terrain, vegetation and general lack of well-dispersed water, livestock use in the CCPA must be attended by two full time riders. Stock can be driven out of the preferred grazing sites and dispersed into lightly used area. Extra herding also benefits conception rates, health care and monitoring of forage use.

4. Fencing

Well-maintained fences are excellent management tools for controlling cattle and confirming them to a particular grazing area for an appropriate time. Fences are useful for:

- Controlling seasonal drift.
- Regulating use among forage types or protecting choice grazing areas for selective use, and protecting critical sites from grazing where required.
- Forcing cattle to graze previously underutilized or new areas; and
- Separating pastures.

Livestock grazing patterns should be observed prior to new fence construction. Fences should promote acceptable levels of grazing on both underused and preferred sites. The splitting of a large pasture into two or more smaller pastures could reduce the grazing period on the individual pastures and improve distribution. Fences may be permanent or temporary (i.e. electric).

5. Trails

Trails can improve livestock distribution on steep terrain by offering livestock modest grades to traverse in order to get to sites not normally used. Trails also will allow stock better movement through thickly forested sites and will make herding more efficient.

Trails along fences will reduce livestock pressure against fences and will also assist in herding.

6. Encroachment Control

Livestock prefer to spend their time on grasslands rather than in forested sites. Because many grassland sites on the Protected Area are being encroached by forest, livestock distribution is being impacted. Control of forest encroachment will improve livestock distribution and overall forage production.

## III. Grazing Systems

Grazing systems manipulate livestock use in a systematic and planned manner to achieve objectives through correct stocking, controlling season of use and prescribed rest periods. Grazing systems control the timing, intensity and frequency of grazing, and if properly designed and implemented can improve livestock distribution and range condition. Within the CCPA, development of grazing systems must also include consideration of recreation, critical habitats, rare and endangered species and any other issue that deals with the natural features or use of the area.

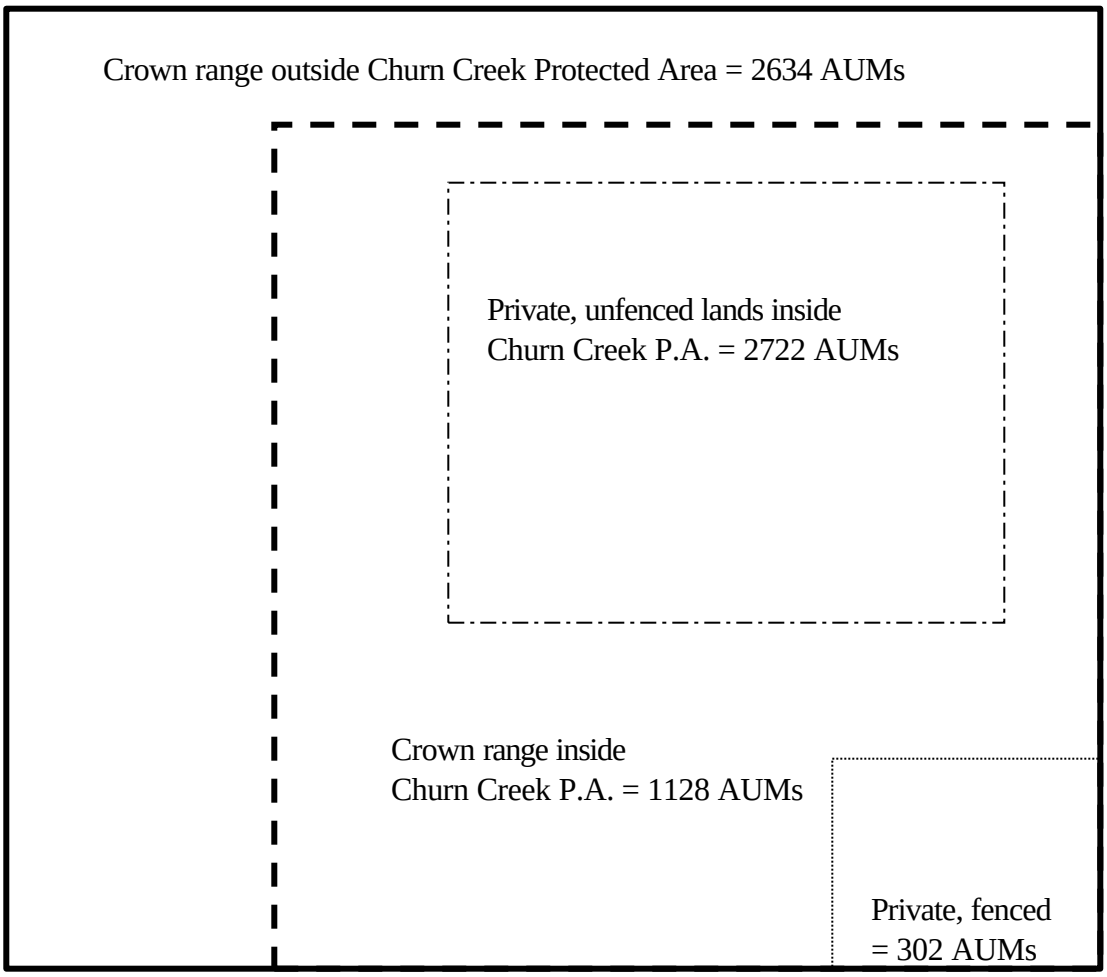
Grazing System Considerations in CCPA

- Develop a rotational system of use on spring ranges which would allow for alternate year use. This will be fully operational only when adequate fencing and water developments have been constructed.
- Dormant season use only, on some depleted range sites.
- Critical habitat and riparian area protection where warranted.
- User flexibility on winter grazing.
- Use of some non-legume hayfields for spring grazing will be considered.
- Expanded use of forested rangelands outside the Protected Area as logging improves access and forage production.

## IV. Livestock Management

The operator of Empire Valley Ranch will be restricted to one herd of animals. No separate yearling steer pastures or heifer breeding pastures will be considered. This will allow more flexibility in developing spring use rotations and reduce sites that could be subject to season-long use by yearlings.

# Appendix E: AUM's and the Churn Creek Protected Area




Legend

Original total base of the former Empire Valley Ranch. This includes private fenced, private unfenced, Crown range outside what is now Churn Creek Protected Area (i.e. Blackdome mountain) and the Crown range inside what is now the Churn Creek P.A.

Private, *fenced lands* of the former Empire Valley Ranch

Private, *unfenced lands* of the former Empire Valley Ranch

Churn Creek Protected Area

## Churn Creek Protected Area and Animal Unit Months: An Explanation

### Background

There have been many discussions at the Churn Creek Local Advisory Group about the appropriate number of cows that should be in the Churn Creek Protected Area. The Cariboo Chilcotin Land Use Plan provides the following direction on cattle numbers:

> "The maximum level of animal unit months (AUM's) in protected areas will be set at the existing level of authorized AUM's as of October 24, 1994. The Ministry of Forests will prepare a report that identifies these authorized AUM levels." (page 37, *CCLUP 90 Day Implementation Report*)

An animal unit month (AUM) is the amount of grass a cow and calf will eat in a month.

For example, if a pasture has a permit for 1000 AUMs, then 1000 cow/calves can be in that pasture for one month, 500 cow/calves for two months, or 250 cow/calves for four months.

Calculating AUM's for the Churn Creek area is complex. Instead of having a permit for a certain number of AUM's in a particular pasture (as above), ranchers in the Churn Creek area have always used a "flow chart" system. Since the Empire Valley Ranch (EVR) is the only ranch in the area (EVR is separated from Gang Ranch by Churn Creek), the EVR has had the option of grazing areas differently each year without conflicting with another ranch's cattle. Pastures were rotated to recover grass or to better utilize certain areas. At the beginning of the year, the ranch would plan where it was going to graze for the summer and submit a flow chart to the Forest Service describing where they were going to be and for how long. AUM's would then be calculated based on this flow chart.

For example, if the Empire Valley Ranch took 2 weeks to move 500 cow/calves through China Lake Pasture, then the Ranch would have used a total of 250 AUM's in that pasture (1/2 month x 500 cow/calves = 250 AUM's).

### Holdings and Range Permits of the Empire Valley Ranch

The diagram on the previous page shows a simplified version of the holdings and range permit of the former EVR. It is important to note that the EVR used, and still uses range both inside and outside the Churn Creek Protected Area boundary.

The thick black outside line of the diagram ( ) represents the entire range area (holdings and permits) used by the EVR. This thick black line includes unfenced private lands, fenced private lands, Crown range in the mountains, and Crown range inside what is now the Churn Creek Protected Area.

The thick dashed line ( ) represents the Churn Creek Protected Area. Note that the Protected Area only covers a portion of the EVR range permit area.

The thin dashed line ( ) represents the unfenced private lands of the EVR. While these lands were privately owned by the EVR, they still required a range permit from the Forest Service to graze them. This was because the ranch could not guarantee their cows would not wander onto Crown land.

Finally, the small box in the bottom right shown in the dashed line ( ) represents the fenced, private land of the EVR. These are the "Specialty Pastures" described in *Section 4.1 – Grasslands Restoration and Management*. Since these areas were fenced and cows could not wander onto Crown land, Forest Service range permits were not required.

**Historic Range Use by the Empire Valley Ranch**

At the time of the Cariboo Chilcotin Land Use Plan, the Empire Valley Ranch had 754 cows on their holdings and range permits (inside the thick black line). Those cows were traditionally turned out on rangelands on April 1st and stayed on range until December 31st (nine months). From January 1st to March 31st they are fed baled hay on the hayfields.

| |
|---|
| 9 months x 754 cows = 6,786 AUM's used by the Empire Valley Ranch on all the land inside the thick black line |

Next, we break down where those 6,786 AUM's were used:

A. The EVR usually used the summer range in the mountains from July 1 until October 15. That is three and a half months.

| |
|---|
| 3 1/2 months x 754 cows = 2639 AUM's in the mountains outside the Protected Area |

B. The EVR had what was called a "Private Land Deduction" for its private, unfenced lands inside the Protected Area. This was a figure that the Forest Service had calculated years ago that showed how many AUM's were associated with the Empire Valley Ranch's private unfenced land. The Forest Service subtracted the "Private Land Deduction" from the bill it sent the EVR for range it used during the year, since the Ranch would not pay for grass it owned. The historic figure Private Land Deduction was 2722 AUM's.

| |
|---|
| 2722 AUM's for EVR's private unfenced lands |

C. Crown range inside the Churn Creek Protected Area also had an AUM figure allotted to it by the Forest Service. When the CCLUP was created, the Forest Service was asked to determine their "best guess" of how many AUM's were associated with the non-private range inside the Protected Area. They estimated this at 900 AUM's. The figure has been revised to 1128 AUM's. The switch from 900 to 1128 will be explained in the next page.

| 1128 AUM's for Crown range inside the Churn Creek Protected Area |
|---|

D. The EVR also had fenced private land inside what is now the Protected Area. These "Specialty Pastures" did not require a range permit, so an AUM figure was never calculated for them. Therefore, we have to determine AUM's through a process of elimination:

| | |
|---|---|
| Empire Valley Ranch total estimated AUM's = | 6,786 |
| Subtract AUM's for the mountains outside P.A. | - 2,634 |
| Subtract AUM's for private unfenced land | - 2,722 |
| Subtract AUM's for Crown range inside P.A. | - 1,128 |
| = Estimated AUM's for private fenced land | 302 |

| 302 AUM's for private fenced land |
|---|

**The Empire Valley Ranch and the Cariboo Chilcotin Land Use Plan**

In 1998, Forest Renewal BC - following recommendations of the Cariboo Chilcotin Land Use Plan - purchased the private (fenced and unfenced) lands of the Empire Valley Ranch for the purpose of "grasslands conservation." These lands were then added to the Churn Creek Protected Area. The CCLUP was very clear that existing permits would continue to be honoured. Since all the private unfenced lands were covered by a Crown range permit, grazing would continue in these areas. The private fenced lands, however, never had a range permit since it was not required. Grazing on these "Specialty Pastures" was optional, since the CCLUP only directed that existing permits would continue.

The calculations show that there are 302 AUM's associated with the private fenced lands (a.k.a. Specialty Pastures). It has also been shown that cattle, on average, graze on range for nine months and are fed for three months. Cattle graze outside the Protected Area for 3 1/2 months (July 1- October 15) and inside the Protected Area for 5 1/2 months (April 1- June 30 and again from October 15 - December 31).

So, if 302 AUM's are divided by the 5 1/2 months they graze inside the Protected Area (302/5.5) it is clear that 54 cows (302/5.5 = 54) are associated with the private fenced lands.

When the private fenced lands were purchased, grazing was optional, not mandatory. So the option not to graze these private lands was exercised and they were taken out of the grazing land base of the Empire Valley Ranch. The ranch's smaller land base can now support 54 fewer cattle (754 cattle originally - 54 cattle associated with private fenced land).

In order to be consistent with the CCLUP, the Empire Valley Ranch supports 700 cows, not 754 cows.

**Cariboo Chilcotin Land Use Plan vs. Proposed Levels of Grazing**

*(The following is hypothetical scenario to show how AUM targets can be met in the Churn Creek Protected Area. This scenario does not suggest pre-approval for any geographic distribution or timing of domestic livestock grazing)*

| **CCLUP @ 700 Cows** | | **Proposed @ 525 cow/calves including bulls** | |
|---|---|---|---|
| Spring turn out (April 1- June 30) | | Spring turn out (April 1- June 30) | |
| 700 cows x 3 months = | 2,100 AUM's (inside P.A.) | 525 cows x 3 months = | 1,575 AUM's (inside P.A.) |
| Mountains (July 1 - Oct 15) | | Mountains (July 1 - Oct 15) | |
| 700 cows x 3 1/2 months = | 2,450 AUM's (outside P.A.) | 525 cows x 3 1/2 months = | 1,838 AUM's (outside P.A.) |
| Fall (October 15 - December 31) | | Fall (October 15 – December 31) | |
| 700 cows x 2 ½ months = | 1,750 AUM's (inside P.A.) | 525 cows x 2 1/2 months = | 1313 AUM's (inside P.A.) |
| Total AUM's used by EVR = | [1] 6,300 AUM's | Total AUM's used = | 4,726 AUM's |
| subtract time outside P.A. | - 2450 AUM's | subtract time outside P.A. | - 1,838 AUM's |
| **Target AUM's for P.A. =** | [2] **3,850 AUM's** | Base Used in Protected Area = | 2,888 AUM's |
| | | Potential Additional Grazing | |
| | | 1 week Churn Flat in January | 132 AUM's |
| | | 2 weeks Clyde Mntn in February | 262 AUM's |
| | | 1 week early turnout in March | 132 AUM's |
| | | **Actual AUM's Used** | **3,414 AUM's** |

[1] difference between 6,786 AUM's and 6,300 AUM's is the 54 cows (54 x 9 = 486) eliminated

[2] There are 3,850 AUM's in the Protected Area. 3,850 AUM's - 2722 AUM's EVR's private unfenced land (Private Land Deduction) = 1128 AUM's, not the 900 earlier estimated. This means AUM target actually increases by 228 in the Protected Area.

## Conclusion

The CCLUP target for range use in the Churn Creek Protected Area is 3,850 AUM's. With the range use scenario outlined below, a herd of 525 cow/calves including bulls will use 3,414 AUM's.

| | | |
|---|---|---|
| **Basic grazing in the CCPA** | | 2,888 AUM's |
| **Potential Extra grazing** | | |
| - grazing Churn Flats for one week in January = | 132 AUM's | |
| - grazing Clyde Mountain for two weeks in February = | 262 AUM's | |
| - herd turned out a week early this year = | 132 AUM's | 526 AUM's |
| **Total AUM's Used in CCPA** | | 3,414 AUM's |

In summary, 525 cow/calves including bulls, grazed as outlined above, does not meet the exact target of the CCLUP. However, the CCLUP states that 3,850 AUM's is only a "maximum amount of AUM's." The extra 436 AUM's can be reached over time as forage and range quality continues to improve.

# Appendix F: History of the Churn Creek Protected Area

Archaeological evidence shows the Churn Creek area has a long history of First Nations' use. This archaeological evidence includes cultural depressions from pithouse villages and surface scatters of stone tool debris. In addition to this physical evidence, a number of oral accounts of the occupation and use of the area from the distant past to the present exist. However, since no formal archaeological work has been done of these sites beyond surface surveys, dates and other details are not currently available.

Although specific archaeological information is not currently available for Churn Creek beyond the fact that is was used for winter settlement, general patterns of use identified in the wider Fraser River area may be used to suggest the probable time frame and lifeways that occur at Churn Creek.

Research undertaken by archaeologists suggests that a distinct culture based on hunting ungulates had developed on the Interior Plateau as long as 7,000 years ago and a tradition of river fishing and Douglas-fir forest adaptation was well established as long as 5,500 years ago. Archaeologists believe pithouses were in use as far back as 4,300 years ago, reflecting an adaptation to the economic patterns that were in evidence when Europeans arrived in the 1800's. These patterns included living in essentially permanent pithouse villages during the winter months and travelling during the remainder of the year to procure plant, animal and mineral resources. Portions of these resources were then stored for winter consumption in the village.

The most well researched site in the Interior is Keatley Creek, located approximately 40 kilometers south of Churn Creek on a terrace above the Fraser River. Based on stone and bone artifacts recovered and plant remains found, archaeologists have determined the village was occupied for more than 2,000 years between 3,500 and 1,200 years ago. This site was also used and occupied as early as 7,000 years ago and as recently as 30 years ago. This gives some idea of when First Nations may have used and occupied the Churn Creek area.

The primary groups that used the Churn Creek area in more recent times were the Shuswap (Secwepemc) and the Chilcotin (Ts'ilqot'in). The Chilcotin are an Athapaskan speaking Nation further subdivided into a number of other divisions known as bands. The Shuswap are a Salishan speaking Nation, and are further divided into tribal divisions and bands. These divisions are recognized as occupying a distinct area. [18]

[18] Much of the historical information on First Nations use of the Churn Creek area comes from a 1994 report prepared by Robert Tyhurst for Parks Canada entitled "Shuswap and Chilcotin Use of Churn Creek: A Review of Written Sources." One of Tyhurst's primary sources of information was a 1909 report by James Teit, an ethnographer who published one of the most detailed and comprehensive studies of Shuswap life just before and shortly after European contact.

Churn Creek itself was the boundary between the Canyon (Se'tLemux) and the Fraser River (Slemxu'lexamux) divisions of the Shuswap. The western boundary of the Fraser River Shuswap, (adjacent to Chilcotin territory) included an area fifty kilometers west of the Fraser River to Big Creek and included all other creeks emptying into the Fraser north to Churn Creek, including Empire Valley.

The Canyon Shuswap lived west of the Fraser, from north of Churn Creek to Hanceville. The main Canyon Shuswap village was located at the mouth of the Chilcotin River. Big Creek was also a boundary marker, which in turn defined the eastern limit of Chilcotin hunting grounds. The Canyon Shuswap division was separated into four bands – Riske Creek band, North Canyon band, South Canyon band and the Chilcotin Mouth band. The Chilcotin Mouth Band lived in the large village near the mouth of the Chilcotin River.

The Fraser River Shuswap division was also divided further into four bands - the Alkali Lake band (Esketemc), Dog Creek band (Xatl'tem), Canoe Creek band (Stwecem'c) and the Empire Valley band. Of these, the Alkali Lake band was closely allied to the Chilcotin Mouth band of the Canyon Shuswap. Some members of the Alkali Lake band intermarried and wintered at the mouth of the Chilcotin River. These bands were so close that some archaeologists class the two bands together.

Intermarriage and friendly relationships occurred between the Chilcotin Mouth band and the Empire Valley band. It is speculated that the mouth of Churn Creek, which may have been an important fishing area, was shared between the Chilcotin Mouth and Empire Valley bands. As mentioned, the Chilcotin Mouth band enjoyed good relationships with the Alkali Lake band while the Empire Valley band had good relationships with the Canoe Creek band. However, relationships between the Chilcotin and the Fraser River Shuswap were hostile and characterized by common raiding and warfare.

The area south of Churn Creek itself was considered the territory of the Empire Valley band of the Fraser River division of the Shuswap. The Empire Valley band was known as Tcexwe'pkamux, named after a pillar of rock on the lower portion of Lone Cabin Creek where some members of the band wintered. The band also wintered in the Empire Valley and along the western side of the Fraser. The population of the band was reduced by a war party of Lillooet in 1825, who massacred a large camp in the Empire Valley. A smallpox epidemic in 1862 further reduced their numbers and the remainder settled with the Canoe Creek band.

The Chilcotin and the Canyon Shuswap were mutually important trading partners. Both Chilcotin and Shuswap sometimes shared winter villages in the area of the lower Chilcotin River. They intermarried and shared fishing sites along the lower Chilcotin. The Canyon Shuswap sent dried fish, salmon oil and woven baskets to the Chilcotin in return for goat wool blankets, caribou skins, fur, mineral paints, obsidian and copper. The Canyon Shuswap however, monopolized this trading relationship and did not permit other Shuswap to trade with the Chilcotin.

The smallpox epidemic of 1862-63 caused near extinction of the Canyon Shuswap and also severely impacted both the Chilcotin and the Fraser River Shuswap. The Chilcotin quickly occupied the area between Hanceville and the mouth of the Chilcotin River, territory previously occupied by the Canyon Shuswap.

It was about this time that non-natives were beginning to affect the traditional lifestyle of the Chilcotin and Shuswap bands. After first contact with Alexander Mackenzie in 1793 and the more famous meeting with Simon Fraser in 1808, the fur trade began to grow in the interior. Fur traders established Fort Alexandria on the banks of the Fraser River in 1821 and the profits from this activity encouraged native men to stay away from home, which in turn affected the subsistence economy and hunting. By the turn of the century, log cabins and tents had, for the most part, all but replaced pithouses, and as a result of disease, native populations were half to a third of what they had been 60 years earlier. Despite the social and technological changes that the First Nations experiences at this time, they continued to use the land for food resources and ceremonial purposed. Until as recently as the 1960's, when much of the population moved onto reserves due to social and political pressures, people were still making a living directly off the land in the Churn Creek area.

Land pre-emption, the Gold Rush, non-native ranching, residential schools, *the Indian Act*, resource development and government legislation all affected First Nations use of the land. The Churn Creek area, however, is still used today for hunting, fishing, food and medicinal plant gathering, religious and recreational activities, all integral to First Nations' culture.

By the 1860's the fur trade declined due to waning populations of furbearers. The discovery of gold in the Barkerville area further increased the non-native presence in the Churn Creek area. Men who did not find success in the goldfields settled in the Cariboo, starting stores, ranches and hotels, and demand for beef in the goldfields led to the creation of the first cattle ranches in the Cariboo.

Some of the first non-native residents of the Churn Creek area would have been pack train operators bringing supplies to the gold fields at Barkerville and Quesnel Forks. While the majority of travelers used the Cariboo Wagon Road through Clinton and 150 Mile House, a few looked for alternative routes up the Fraser River corridor. These individuals looked for cheap feed for their pack animals and attempted to avoid charges at the numerous road houses and liveries on the wagon road. These early packers may have overwintered to allow their animals to graze on the huge areas of quality grass they would have found around Churn Creek.

As more people became aware of the area around Churn Creek, they probably began to consider living there on a permanent basis. The ready supply of grass would have been an incentive for anyone with a background in raising cattle or horses.

Much of the history of the early settlers in the Churn Creek/Empire Valley area comes from speculation. The first formal surveys and titles do not appear until 1891. Before Confederation, settlers who wanted to claim the land they were living on had to file for a preemption with the British Columbia Government in New Westminster. These preemptions were limited to 320 acres at the time.

By the 1880's, British Columbia had a large Chinese population. Some came to work in the goldfields, some came to work on the Canadian Pacific Railroad, and others were imported by the wealthier class as coolies. These coolies were admitted by paying a head tax of $200 per person. After completing work on the CPR, many of these Chinese workers ended up in the Dog Creek area, which in the 1880's had four Chinese run stores and a saloon. Many of these Chinese workers were used as cheap labour to dig mile upon mile of ditch from lakes and streams to placer mines on the Fraser River.

While there is little formal documentation of the activities of the Chinese miners, we know they established two mines in the Empire Valley area, one located at the Fisheries Bar and the other located upstream at Onion Bar. In order to obtain the water they required, the miners went all the way back to Koster Lake (a.k.a. China Lake). It is suspected that it was these Chinese miners who built the original dam to impound large quantities of water in Koster Lake. Two ditches were dug from Koster Lake, one traveling though the Gap adjacent to where the calving barns are now located, and the other one traveling north of Airport Mountain to the Onion Bar Mine. The miners left the area around 1910.

Water flowing from Koster Lake powered a twelve foot, belt driven water wheel. This wheel (again, it is suspected this wheel was built by the Chinese miners) powered a small mill, which was used to saw planks for flumes and sluiceboxes. The water wheel was also used to power a small grist mill. Considering that the Dry Farm area was planted with wheat, the mill was probably used to produce flour for residents of the Empire Valley area.

Around the time the Chinese miners were working their placer mines, and even before Jerome and Thadeus Harper arrived in the 1860's to establish the Gang Ranch, a number of "old timers" lived in the Churn Creek area. Tom Wycott lived on the north side of Churn Creek on the bench that currently bears the name "Wycott Flats". Tom later sold this land to the Gang Ranch, who still owns the lots today. The old homestead can still be found back in the trees.

Another man named Simon Phillipine owned about 1,000 acres of land just north of Lone Cabin Creek and lived in a small cabin south of the creek. He had a small hayfield on the lot which produced just enough hay for a few horses. When he died in the 1950's, the Empire Valley Ranch purchased the land north of the creek. The deeded lots south of the creek where the old cabins are located are now owned by Ron Cable.

Harry Higgenbottom was another old time settler who owned 640 acres in what is now called Higgenbottom Valley. He lived with his common-law wife Mariah Wycott (related to the Churn

Creek Wycott's) in a cabin on Higgenbottom Creek just north of Lone Cabin Creek. They raised horses and a small herd of 30 cattle at the little ranch. Harry was killed in the 1920's while serving a year at Okalla prison for cattle rustling. Mariah sold the 640 acres at Higgenbottom to what was then the Empire Crows Bar Ranch. The family sold their horses and moved to the cabin lower on Higgenbottom Creek. This property was purchased by Ron Cable in 1983.

Another of the early residents who lived in the area was a packer named McGee, who lived on a low benchland now called McGee Flats. Plenty of grass and a small spring ensured he was there long enough to leave his name. However, he never obtained legal title to the land and little is known of him.

Title to McGee Flats was taken by the Brysons and the Carsons, who owned a sheep ranch at Pavilion. The Brysons and the Carsons eventually owned 3,000 acres of the deeded lands south of where the current ranch headquarters is located. They used these low elevation areas as their spring range while they waited to turn their sheep out on the high summer ranges. These summer ranges were later used by the Big Bar Sheep and Wool Company and then the Hayward Sheep Ranch based in Heffley Creek. This long string of sheep ranchers used these summer ranges well into the 1950's, when they were finally taken over by the Empire Valley Ranch. A small cabin, called the "sheepherder's cabin" is still located on a little bench a few kilometers south of the ranch.

With the pending completion of the Canadian Pacific Railroad in late 1880's there was a growing interest in ranching and the establishment of cattle companies. In 1891 the Brysons and Carsons sold their deeded lands to a pair of Scottish brothers named Sandy and Thomas McEwen. Starting with these lands, Sandy and Thomas then surveyed the areas around where the present day ranch buildings are located. They built their ranch headquarters next to Grinder Creek, a short distance away from the current site of the ranch headquarters.

While the McEwens were busily procuring land and building a ranch in the south, a number of individuals and families were building ranches and securing land in the north. The four Brown brothers took title to the area around what is now called BC Lake as well as to the area where the Bishop hayfield is currently located. These 2,000 acres of land enabled the Browns to run about 100 head of cattle. They also ran the gristmill and sawmill at Koster Lake. The original Brown Ranch homestead can still be found in the big aspen grove above BC Lake. Brown's Lake is named after them.

In the early 1890's the Boyle family acquired three lots in the upper Empire Valley in the area known today as the Boyle Field/Boyle Ranch. Their house was located next to a spring above the present day hayfield and commanded a view of the whole valley. When the house burned down years later it was never rebuilt, and the McEwens eventually took ownership of the lots. Remnants of an old corral still stand on the grasslands above the valley, and while the natural

grasslands have largely returned to this area, furrow marks can still be seen in the fields on the benches above the old Boyle place.

Another ranch that was developing about this time was owned by the Bishop brothers. Jack, Anthony and Tom started their ranch with four lots: one located on the site of the calving barn; another below Dry Lake; another north of Airport Mountain and another on the Churn Creek delta. The lot at Churn Creek was used to produce at least three crops of hay and vegetables, and another homestead was located up on a hillside north of Airport Mountain just below the old Chinese water ditch. Remnants of the old gardens can still be found at the Churn Creek delta.

The Bishops eventually acquired the lot on the Bishop hayfield from the Brown brothers. The Bishops went on to secure additional deeded land until they owned almost everything between Brown's Lake and Churn Creek, enabling them to run 300-400 head of cattle. They also acquired first water rights to Koster (China) Creek when the miners left. The Bishops built their main ranch against the hill in Bishop Hayfield. While the house burned down in the 1950's, the old barn still stands along with remnants of the old apple orchard.

Meanwhile, the McEwens were still working to expand their Empire Valley Ranch in the south. They obtained title to the Boyle Ranch, the Bryson and Carson Sheep Ranch and applied for title to the area stretching from the benchlands along the Fraser River all the way up to the high timber.

In 1910, the McEwens sold their holdings to John Kenworthy and his wife. Mrs. Kenworthy was the sister of Mrs. Wynn-Johnson, who owned the Alkali Lake Ranch with her husband, Charles. When it was sold to the Kenworthys, the Empire Valley Ranch consisted of 17,000 acres of deeded land extending from the Fraser to the upper timber and ran approximately 400-500 head of cattle.

It was also around 1910 that the Empire Valley obtained its first school. The Browns and the Bishops had children, and there were also other families in the area. However, a minimum number of children were required in order to qualify for a teacher. Someone from the Empire Valley was in Ashcroft and ran into a family called the Zimmerlys, who had a several children. The Zimmerlys were promised free land if they moved to the valley. As a result of their arrival, a school was built next to Brown's Lake, and remained open until 19xx. Foundations of the old school can still be seen on a flat spot next to the dam. The old Zimmerly homestead is located up Grinder Creek close to the Blackdome Road, although their original cabin was located next to Brown Lake by the Bishop hayfield.

In 1909 construction began on the bridge crossing the Fraser River. The ferry that had operated just north of Churn Creek since the late 1860's was rapidly losing its usefulness, especially in light of the ranches being built west of the Fraser. (During the winter the Fraser could only be crossed by ice bridge, rowboat or by the cable tramway located at fisheries rock.) A steam-

powered sawmill was set up on the site to cut the timbers for the bridge, which were skidded from the east side of the river. Iron and cables were hauled by horse team from Ashcroft. The bridge was finally opened in 1913.

In 1914, John Kenworthy, who was a captain in the British Army, went back to Europe to fight in the war, leaving his wife and young son to live on the ranch. He was listed as Missing in Action after the war and as a result, Mrs. Kenworthy put the ranch up for sale. It was also about this time that the Browns were trying to sell their ranch. The
BC Cattle Company, located at Canoe Creek across the Fraser, eventually purchased the Brown Ranch. The name "BC" meadow comes from the BC Cattle Company name.

Across the Fraser River, Henry Koster Sr. (who was partner in the Alkali Lake Ranch until it was sold to the Wynn-Johnson's in 1909) purchased the Crows Bar Ranch in 1914. In 1923, after ten years on his new ranch, Henry Koster was approached by Mrs. Kenworthy with a proposal to become partners on the Empire Valley Ranch. It was a 50/50 arrangement where Henry Sr. would be manager and Mrs. Kenworthy a silent partner. The Crows Bar and Empire Valley Ranches were amalgamated into the Empire Crows Bar Ranching Company. Mrs. Kenworthy moved back to England, the Kosters moved to the Empire Valley and the Crows Bar was run with a hired man.

In 1925 Jack Bishop sold his 7,000 acres of deeded land to the Empire Crows Bar Ranch. (Actually he would not sell to "an Englishwoman", so he sold to Tom Campbell, a cattle dealer from Kamloops - Campbell promptly sold the ranch to the Koster-Kenworthy partnership). This gave the Empire Crows Bar complete control of the water systems that had been a source of conflict over the years. This also gave the Empire Crows Bar Ranch almost complete control over the area between Lone Cabin Creek and Churn Creek as well as portions of the Crown range to the west of Churn Creek, enabling the ranch to run about 1300 head of cattle. The only other significant property was owned by the
BC Cattle Company.

In 1928, the Empire Crows Bar Ranch purchased the BC Cattle Company Ranch at Canoe Creek and was given the new name of the BC Cattle Company. The headquarters were located at Canoe Creek. Basically, two complete ranches were formed as a result of the deal; an 18,000 acre ranch on the east side of the Fraser and a 27,000 acre ranch on the west side. The two properties together formed one of the largest and best cattle ranches in the Interior of British Columbia. An added benefit of the deal was that the Empire Valley side of the ranch gained control of the 2,000 acres of land around the BC Meadow. Simon Phillipine and the Higgenbottoms were the only other land owners on the west side of the Fraser

The Kosters moved to the Canoe Creek side of the ranch. In the mid 1930's Jack, Henry Sr.'s son, moved to Empire Valley and took over management of that side. In 1942, Henry Jr. took over management on the Empire Valley side of the Ranch and Jack went back to the Canoe Creek side to help his dad.

In 1947, Henry Koster Sr. passed away, leaving Jack as general manager. Not long after that, Mrs. Kenworthy's son Sam let the Kosters know he wanted to sell his share of the ranch, and the Kosters bought out the Kenworthys.

It was in late 1940's when Jack, Henry and their sister Evelyn Joel (Dodie) decided to make a number of changes to the Empire Valley side of the ranch. The main ranch headquarters, which had consisted of several old log building, was moved to it's present location. Two new bunkhouses, a cook house complete with cooks quarters and dining room, a three-bedroom house, horse barn and machine shed and shop were built. In order to put up more hay for the winter, a dam was built at BC Meadows, turning it into what we now call BC Lake.

In 1951, the Ranch purchased a RD7 bulldozer to complete the next round of major improvements. A new road was built into the ranch headquarters, the road through the main valley was upgraded, the Gap was turned into a hayfield by filling in the field to enable water to be brought to both sides of the field without using a flume. In addition, corrals and branding chute were constructed.

In 1952, Jack and Henry Jr. split the BC Cattle Company Ranch into two separate entities. Jack took the Canoe Creek Ranch on the east side and Henry took the Empire Valley Ranch on the west. Dodie, now Mrs. Doug Robertson, kept a one third interest in both ranches.

It was also in the late 1940's that gold was discovered on Blackdome Mountain by a prospector named Lawrence Frenier, who staked large areas on the western edge of the mountain. It was also about this time that gold was discovered on Churn Creek. Frenier, who used a small cat to prospect the area, also discovered what is known as the Frenier Perlite Deposit above Higgenbottom Creek. He sold his Blackdome claims to Jim Cooper and Earl Brett and left the valley. It was Cooper and Brett who built the original Blackdome mine road through the ranch headquarters, up Grinder Creek and then south to Porcupine Creek through the Higgenbottom Valley. The Kosters kept this gate locked, but allowed key access to Cooper and Brett.

The present Blackdome Mine Road was built around 1960 by a man named Fred Freize, who lived back on Porcupine Creek at a place called Freize Camp. Freize had access to his place through the lower part of the Empire Valley Ranch via Hog Lake. Freize apparently had a dispute with the Brysons about having to obtain a key to this locked gate every time he wanted to go through. To resolve his access problems, Freize took a bulldozer and built a road starting in the Higgenbottom Valley and skirted the deeded land of the Empire Valley Ranch. The road wound up and around Dry Farm and eventually joined the Empire Valley Road through a small break in the private lands near the end of Brown's Lake. Blackdome later extended and improved this road to provide a shorter route to the mine.

In 1956, the Empire Valley Ranch was sold to Clarence and Eleanor Bryson from Merritt. In order to strengthen their purchase price, the Bryson's sold the timber rights to 7,600 acres of the deeded land to MacMillan Bloedel, while retaining the grazing rights. The Kosters retained two private lots totaling 740 acres, later selling them to Pacific Pine. It was the interests of these timber companies that put an end to the practice of burning to kill the thousands of little Douglas firs that grew in the grasslands.

While the majority of the ranch improvements were completed by the Kosters, the Brysons constructed two more houses, improved the hay base, constructed sprinkler irrigation systems and focused the ranch on a cow-calf operation. The ranch supported 2000 head of cattle by the time the Brysons sold the ranch in 1967.

In the early 1950's, Henry Koster was looking to improve the summer ranges of the Empire Valley Ranch. He had completed some exploratory work in the Red Mountain Meadow and Tyaughton Creek areas, and had received permission from the Forest Service to cut a stock trail in order to use a portion of this summer range. They had just begun to use the new range around Red Mountain when a number of cows died from eating larkspur. They immediately hand pulled all the weeds they could find. A man hired to cut the trail out to Tyaughton Creek found similar weed problems and the range was never used.

The majority of the summer range behind the Empire Valley Ranch belonged to the Hayward Sheep Ranch for years, but as the Brysons were in the process of taking over from the Kosters, the Haywards were also getting out of the sheep business. As a result, the Brysons were able to dramatically increase the range controlled by the Empire Valley Ranch. The new range included Red Mountain, Poison Mountain, Quartz Mountain, lower Relay Creek, Spruce Lake and Gun Creek. Cabins were built or acquired on Fairless Creek, Poison Mountain, Yodel Camp and Relay Creek. After 1977 grazing rights were gradually reduced, leading to the loss of the areas around Spuce Lake and Posion Mountain.

Robert Maytag (from the Maytag washer family), purchased the Empire Valley Ranch in 1967 and owned it until 1974. Maytag was responsible for negotiating an agreement with the school district to reopen the school at Empire Valley, which operated from 1969 until 1977. In 1974, Maytag sold the Ranch to Sophie Stegemann, an entrepreneur from Germany, and two of her children.

Mrs. Stegemann gained headline news when she shipped some of her horses from Germany to Vancouver by jet. Her tenure at Empire was greatly complicated by the fact that her team of advisors had severely misrepresented the financial information about the Ranch, which she felt had suffered under an absentee owner.

Coming from a strong farming background, she recognized the need to not only improve the fields but also change the grazing patterns of the upper and middle grasslands to repair damage done by overgrazing. New fences were built and existing ones repaired. Several additional fields

were put under sprinkler irrigation and weed control systems was put in place. At the Ranch headquarters many of the buildings were repaired as well as some of the range cabins. Under her management the Ranch was once again making money but her ownership was cut short when the German Tax Authority seized her assets in a dispute and she was unable to pay the mortgage. In 1977, Maytag foreclosed on Stegemann and the ranch went back into his hands.

In 1978 the ranch changed owners again. Robert Maytag exchanged the Empire Valley Ranch in a straight swap for a ranch in Colorado belonging to Tom Hook. Hook took a more conservative approach to stocking, keeping about 1000 head on the ranch. He also put Point Field under production. Hook also negotiated a deal where Fletcher Challenge purchased timber from both the ranch and the MacMillan Bloedel properties. Under the term of the deal Fletcher Challenge had five years to log both the ranch and the MB properties, after which the title to the land passed back to the ranch. In 1989, Tom Hook sold the ranch to Pepperling and Bothne. They in turn sold it to Otto Hueszner in 1992.

In 1995, the Cariboo Chilcotin Land Use Plan was announced by government, creating the Churn Creek Protected Area. The CCLUP recommended that the private lands of the Empire Valley Ranch be added to the Protected Area. In 1997, Hueszner sold the Ranch to Vesco Contracting, a logging and ranching company based in Prince George. In order to finance the purchase, Vesco began logging portions of their private lands. Public concern about this private land logging convinced Government to begin negotiations to acquire the ranch's private lands. In the spring of 1998, the Empire Valley Ranch was purchased by the province and added to the Churn Creek Protected Area.

# Appendix G: Goals for Protected Areas

BC Parks has adopted the goals of the Protected Areas Strategy[19]:

**Goal 1: Representativeness**

*To protect viable, representative examples of the natural diversity of the province, representative of the major terrestrial, marine and freshwater ecosystems, the characteristic habitats, hydrology and landforms, and the characteristic backcountry recreational and cultural heritage values of each* ***ecosection.***

Wherever possible, protected areas should combine natural, cultural heritage and recreational values. Where it is not possible to combine these in a common area, they may be represented separately. Where it is not possible to represent all values, the natural values will be given priority.

**Goal 2: Special Features**

*To protect the special natural, cultural heritage and recreational features of the province, including rare and endangered species and critical habitats, outstanding or unique botanical, zoological, geological and paleontological features, outstanding or fragile cultural heritage features, and outstanding outdoor recreational features such as trails.*

Many protected areas will be set aside primarily to protect rare or vulnerable features. Others will combine protection with giving people the opportunity to appreciate and enjoy the intrinsic value of the areas. Others will be protected to attract people to experience and appreciate their natural and cultural heritage.

[19]Province of British Columbia. 1993. A Protected Areas Strategy for British Columbia, Victoria, BC

# Appendix H: Organizations Represented on Churn Creek Local Advisory Group

Cariboo Cattleman's Association
Back Country Horseman of British Columbia
British Columbia Grasslands Conservation Council
Williams Lake Field Naturalists
Blackdome Mine
Cariboo Tribal Council
Gang Ranch
Horse Council of British Columbia
Cariboo Chilcotin Conservation Society
Ministry of Transportation and Highways
Cariboo Communities Coalition
West Fraser Mills
Four Point Hilton
BC Snowmobiling Federation
BC Wildlife Federation
Ministry of Employment and Investment – Mines Branch
Guide Outfitters
Riverside Forest Products
Ducks Unlimited
Fernier Perlite Mine
BC Environment – Wildlife Branch
Ministry of Forests – Research Branch
Ministry of Aboriginal Affairs
SHARE Cariboo Chilcotin Resources
Great Cariboo Ride
Williams Lake Powder Kings Snowmobile Club
Ministry of Agriculture, Fisheries and Food
Ministry of Small Business, Tourism and Culture (Tourism)
Wild Sheep Foundation of North America
Lignum Ltd
Ainsworth Forest Products
Cariboo Tourism Association
Parks Canada
J&J Cattle Company
Williams Lake Rod and Gun Club
Placer Miners
Hunters
Recreationists

Empire Valley Cattle Co (1974) Ltd.
Other ranchers
Interested members of public and Media

# Appendix I: Description of Major Grassland Ecosystems in Churn Creek

## Lower (BGxh3) Grasslands

Location:

In the CCPA, the Lower Grasslands occupy lower and middle slopes of the Fraser River valley. Elevations range from approximately 450 m on the valley floor to 650 m on valley side-slopes. The topography is characterized by eroded valley slopes and prominent terraces. Erosional features and colluvial slopes are very common. The terraces are primarily silt loam and sandy loam deposits which accumulated on the bed of the glacial Fraser River. The current Fraser River has downcut into the glacial deposits and, as a result, the valley bottom is relatively narrow and little floodplain is present.

The Lower Grasslands are closely related to other low elevation grasslands in main valley systems of southern B.C. and to the sagebrush-bunchgrass grasslands of the northwestern U.S.

Climate:

Mean annual temperature: 5.9°C
Mean annual precipitation: 330 mm
Mean summer precipitation: 177 mm

Vegetation:

Zonal[20] Sites: Climax vegetation on zonal sites is dominated by bluebunch wheatgrass (*Elymus spicatus)*, scattered to abundant big sagebrush (*Artemisia tridentata)*, and a soil crust of lichens and dryland mosses. Other commonly occurring plants include needle-and-thread grass (*Stipa comata)*, sand dropseed *(Sporobolus cryptandrus)*, Sandberg's bluegrass *(Poa sandbergii)*, junegrass *(Koeleria macrantha)*, prickly pear cactus (*Opuntia fragilis*), rabbitbrush (*Chrysothamnus nauseosus)*, pasture sage *(Artemisia frigida)*, large-fruited desert-parsley *(Lomatium macrocarpum)*, low pussytoes *(Antennaria dimorpha)*, umber pussytoes *(A. umbrinella)*, Holboell's rockcress *(Arabis holboellii)*, and yarrow (*Achillea millefolium)*. Vascular plants often cover less than 50% of the soil surface while ground lichens, algae and dryland mosses may cover up to 80% of the soil surface. Bluebunch wheatgrass typically decreases while the other grasses initially increase with grazing. Big sagebrush has probably increased with grazing and fire suppression.

Productivity is much lower and vegetation recovery following disturbance is much slower than in the Middle and Upper grasslands.

[20] Zonal sites are those sites where the influence of the prevailing climate on the vegetation is believed to be least modified by the local topography and the physical/chemical properties of the soil. They have intermediate soil moisture and soil nutrients.

Other Sites:

Steep north aspects often have bluebunch wheatgrass dominated vegetation in which the cover of bluebunch wheatgrass is much greater than on zonal sites. Big sagebrush is much less abundant and some cooler site species such as three flowered avens (*Geum triflorum*) are common. These slopes are often only lightly grazed by cattle.

Moderately sloping south and west aspects with sandy soils typically have vegetation dominated by sand dropseed or needle-and-thread grass. Steep south aspects have sparse vegetation of bluebunch wheatgrass, needle-and-thread grass, big sagebrush, compact selaginella, sand dropseed, and prickly pear cactus.

Moist lower slopes have a relatively dense cover of grasses (primarily bluebunch wheatgrass and needle-and-thread grass) with relatively little big sagebrush. Riparian areas have a variety of taller shrubs including Douglas maple (*Acer glabrum)* and water birch *(Betula occidentalis)* and often poison ivy *(Rhus radicans)*.

Soils: Soils of the Lower Grasslands are predominantly Brown Chernozems. Organic matter levels in the Ah are lower than in the middle and upper grasslands and the Bm horizon is often more calcareous. Soils are developed primarily in silt loam to sandy loam fluvial deposits that are often gravelly.

### Middle (BGxw2) Grasslands

Location:

In the Churn Creek Protected Area, the Middle Grasslands occur on the middle and upper slopes of the Fraser River valley and lower reaches of the Churn Creek valley. They occupy a band between the Lower and Upper grasslands at elevations of about 650 m and 800 m. The topography includes gullied valley slopes, colluvial slopes, fluvial terraces, basal moraine, bedrock cliffs and escarpments, and cliffs of unconsolidated fluvial deposits.

Climate:

Mean annual temperature: 5.0°C
Mean annual precipitation: 345 mm
Mean summer precipitation: 197 mm

Vegetation:

Zonal Sites: Late seral and climax vegetation on zonal sites is dominated by bluebunch wheatgrass, needle-and-thread grass and junegrass. Other common species include umber pussytoes, meadow salsify *(Tragopogon pratense)*, trailing fleabane *(Erigeron flagellaris)*, cut-leaved daisy *(E. compositus)*, pasture sage, spike-like goldenrod *(Solidago spathulata)*, wild blue flax *(Linum lewisii)*, northern wormwood *(Artemisia campestris)*, large-fruited desert-parsley, and slender hawksbeard (*Crepis atrabarba)*. Total plant cover of species is typically greater than in the Lower Grasslands. Big sagebrush occurs primarily at the lower elevations of the Middle Grasslands and is much less common than in the Lower Grasslands. South of Churn Creek, vegetation on these

sites frequently contains green needlegrass (*Nassella viridula*), which may dominate heavily grazed sites. Productivity and the diversity of vascular plant species is higher than in the Lower Grasslands but lower than in the Upper Grasslands.

With persistent heavy grazing of bluebunch wheatgrass, its abundance declines and other grasses including needle-and-thread grass, junegrass, and sand dropseed tend to initially increase in cover. With continued heavy grazing, these species also decrease in cover and are largely replaced with more weedy native forbs such as pussytoes, fleabanes and pasture sage.

Other Sites:

Moist lower slopes and shallow depressions are dominated by short-awned porcupinegrass, occasionally with spreading needlegrass or green needlegrass on very moist sites. Other species characteristic of these sites are sticky geranium (*Geranium viscosissimum*), balsam root (*Balsamorhiza sagitatta*), northern bedstraw (*Galium boreale*), prairie rose (*Rosa woodsii*), saskatoon (*Amelanchier alnifolia*), western snowberry (*Symphoricarpos occidentalis*), lemonweed (*Lithospermum ruderale*), and round-leaved alum root (*Heuchera cylindrica*).

Dry, steep south-facing slopes are dominated by a relatively sparse cover of bluebunch wheatgrass, needle-and-thread grass, pasture sage, and sand dropseed. Big sagebrush and rabbitbrush are often present.

Soils: Soils are predominantly Orthic Brown or Dark Brown Chernozems with a 15 - 30 cm thick organic-rich surface (Ah) horizon which occurs primarily in the silty aeolian cap that covers most morainal deposits of the area.

## Upper (IDFxm) Grasslands

Location:

Upper Grasslands occur above the Middle Grasslands on upper slopes of the Fraser River Valley and on the adjacent plateau. They also occur on the plateau adjacent to the Churn Creek Valley as far west as the western edge of the protected area. Elevations are 800 - 1200 m on a predominantly level to gently rolling landscape. The vegetation is a mosaic of grasslands, Douglas-fir forests, and aspen forests.

Climate: (data available from only 1 station north of CCPA)

Mean annual temperature: 5.4°C
Mean annual precipitation: 386 mm
Mean summer precipitation: 191 mm

Vegetation:

General: The IDFxm Subzone is a transition from open grassland to continuous forest. Although the theoretical climax vegetation on zonal sites is a forest, the climate is only marginally suitable for forest. As a result, the vegetation shifts from forest to grassland and

from grasslands to forest in response to small local changes in climate, site or historical factors. The resulting landscape is a mosaic of forest and grassland in which the forest occurs predominantly on cooler, moister sites and the grasslands on warmer, drier sites. Soil differences may also contribute to the current pattern of forest and grassland.

Zonal Sites: Relatively undisturbed grasslands on zonal sites are dominated by bluebunch wheatgrass, short-awned porcupine grass and spreading needlegrass. Small patches dominated by one of the latter two grasses often occur within a matrix of all three species. Plant cover is nearly continuous and a thick litter layer is often present where fires have not occurred recently. A very diverse forb, graminoid, and lichen flora is present. Other common grass and grass-like plants are Rocky Mt. fescue (*Festuca saximontana*), Kentucky bluegrass (*Poa pratensis*), junegrass, pasture sedge (*Carex petasata*) and blunt sedge (*Carex obtusata*). In contrast to the Lower and Middle grasslands, needle-and-thread grass is uncommon. Common forb species include yarrow, umber pussytoes, northern bedstraw, spike-like goldenrod, cut-leaved anemone (*Anemone multifida*) and Holboell's rockcress. Common lichens include *Cladonia pyxidata, C. cariosa* and *Peltigera lepidophora*.

Other Sites: On gentle north- and east-facing slopes, the vegetation is often dominated by short-awned porcupine grass with only incidental bluebunch wheatgrass. Moderate to steep north-facing slopes typically have a spreading needlegrass vegetation while moist, lower slopes are dominated by spreading needlegrass, Kentucky bluegrass and baltic rush (*Juncus balticus*). Steep, dry south-facing slopes typically have bluebunch wheatgrass vegetation with sparse plant cover.

Soils: Soils in the Upper Grasslands are most often developed in a veneer (20 - 50 cm thick) of silty or loamy aeolian materials over basal moraine. Soils are predominantly Dark Brown Chernozems with a 15 - 30 cm thick organic-rich surface mineral (Ah) horizon. The Ah horizon is generally darker (contains more organic matter) than in the Middle Grasslands.

# Appendix J: Method for Determining Principal Ecosystem Units

Detailed site series descriptions can be found in the draft Guide to *the Grassland Ecosystems of the Cariboo Forest Region* (Coupé, in progress). Note: Site series that do not occur in the Churn Creek Protected Area have not been included; the only forested site series included are forested riparian areas in the Lower and Middle Grasslands; and some small, infrequently occurring ecosystems such as bedrock outcrops and cliffs were not included.

| Principal Ecosystem Unit | Physical Description | Equivalent Site Series* |
|---|---|---|
| **LOWER GRASSLANDS (BGxh3)** | | |
| Talus | steep, rubbly slopes | /81 |
| Gentle Slopes and Terraces – Sage dominated | Big sage dominated sites on glaciofluvial & glaciolacustrine terraces along the Fraser River & gently sloping & rolling areas of various materials | /01 – in part<br>/80 – in part |
| Gentle Slopes and Terraces – Grass dominated | As above, but grass-dominated with little or no big sage | /01 – in part,<br>/80 – in part, /84, /85 |
| Moist Depressions and Swales | Swales, depressions and basins that collect snow or runoff; grass or shrub dominated | /51, /86, /88 |
| Steep cool slopes – Grass Dominated | Steep cool slopes with vigorous & continuous grass cover | /87 |
| Steep slopes – Sparsely Vegetated | Steep, actively eroding slopes, often with less than 10% vegetation; occur on all aspects but are most common on warm aspects | /01b (cool aspects)<br>/82 (warm aspects)<br>/83a (warm aspects) |
| Moderate to steep slopes – Sage dominated | Moderate to steep slopes dominated by big sage; occur on a variety of materials and aspects | /01 in part (cool aspects)<br>/80 in part (rock outcrops)<br>/83b (warm aspects) |
| Streamside riparian | Shrubby or treed riparian areas with permanent or intermittent water flow; includes gullies, creeks & floodplains | /03, /04, /05, /06, /52, /53 |
| Lakeshore Riparian and Wetlands | Ponds, lakes & their associated shrubby or graminoid riparian vegetation; marshes & wet meadows | /30 |

| **MIDDLE GRASSLANDS (BGxw2)** | | |
|---|---|---|
| Talus | Steep, rubbly slopes | /82 |
| Gentle to Moderate Slopes and Terraces | Gently to moderately sloping & rolling areas of various materials on all aspects; also glaciolacustrine & glaciofluvial terraces | /01 in part /84, /85 |
| Moist Depressions and Swales | Swales, depressions & basins that collect snow or runoff; may be grass or shrub dominated | /87, /88, /50 in part |
| Steep Cool Slopes | Steep cool slopes with vigorous & continuous grass cover | /86 |
| Steep Warm Slopes | Steep warm slopes; often with some surface erosion; often have big sage | /83 |
| Aspen Copses | Aspen dominated depressions within a grassland matrix | /06 |
| Streamside Riparian | Shrubby or treed riparian areas with permanent or intermittent water flow; includes gullies, creeks & floodplains | /05, /07 |
| Lakeshore Riparian and Wetlands | Ponds, lakes & their associated shrubby or graminoid riparian vegetation; marshes & wet meadows | /30, /31, /32, /33, /50 in part, /60, /61 |
| **UPPER GRASSLANDS (IDFxm, IDFdk4)** | | |
| Talus | Steep, rubbly slopes | |
| Gentle to Moderate Slopes and Terraces | Gently to moderately sloping & rolling areas of mostly morainal materials; all aspects | /82, /83, /84, /85 in part |
| Moist Depressions and Swales | Swales, depressions & basins that collect snow or runoff; grass &/or shrub dominated | /86, /87 |
| Steep Cool Slopes | Steep cool slopes with vigorous & continuous grass cover | /85 in part |
| Steep Warm Slopes | Steep warm slopes; often some surface erosion | /81 |
| Aspen Copses | Aspen dominated depressions within a grassland matrix | |
| Lakeshore Riparian and Wetlands | Ponds, lakes & their associated shrubby or graminoid riparian vegetation; marshes & wet meadows | /30, /31, /32, /33, /34, /35, /36, /60, /61, /62 |

The following slope classes were used:
Level and gentle: 0-15%
Moderate: 16-30%
Steep: > 30%

The following aspect classes were used:
Warm: 135 – 314 degrees
Cool: 315 – 360 & 0 – 134 degrees

# Appendix K: Current Condition of Principal Ecosystem Units by Biogeoclimatic subzone

**Method for Assessing Current Condition of Grasslands**

Assessment of the current condition of the grasslands began with a two-day calibration trip for the personnel performing the assessments.[21] A wide variety of sites throughout the Churn Creek Protected Area were visually assessed as a group so team members would have a common approach to assessing seral stages and Potential Natural Community.

Each individual on the assessment team was assigned a Range Unit within the Protected Area. Assessments consisted of visual estimates of seral stages for all Principal Ecosystem Units in that range unit (see example table below). Team members were also asked to assess broad patterns of ungulate (sheep and deer) and cattle use as well as any noxious weeds that were encountered. Only riparian areas that occurred in grassland areas were assessed.

On average, team members spent one to three days of field time traversing each Range Unit (depending on unit size). Notes on seral stage were recorded on maps and/or airphotos. Where available, these maps and copies of the airphotos have been put on file with BC Parks for use as reference points in future seral stage assessments. These assessments represent estimates and have not been verified with detailed quantitative sampling.

Because it was not feasible to assess all ecosystems (site series), site series were grouped into Principal Ecosystem Units based on broad terrain features easily recognized in the landscape. Details on how site series were grouped into Principal Ecosystem Units can be found in *Appendix J: Method for Determining Principal Ecosystem Units*.

After each team member had assessed the seral condition of their assigned Range Unit, they entered their data into a table. The numbers in the table represent how much of a Principal Ecosystem Unit is in a particular seral stage condition:[22]

0 = 0%
1 = 1-10%
2 = 11-35%
3 = 36-65%
4 = 66-84%
5 = ≥85%

[21] Staff from the Research and Range sections of the Ministry of Forests and the Ministry of Environment, Lands, and Parks and a Grasslands Conservation Council volunteer.

[22] Percentage classes were used because seral stage assessments were not detailed enough to actually determine exact percentages.

For example, in the sample below, assume there are approximately 100 hectares of Steep cool slopes in a given range unit and the assessment indicated approximately 20 hectares were in early seral condition. 20 hectares ÷ 100 hectares = 20% in early seral, therefore the number 2 is entered in the early column.

**Bolded** numbers indicate that the seral stage target for that class has not been met. The table shows, at a glance, in which Principal Ecosystem Unit seral stage targets have been met and in which Principal Ecosystem Unit they have not been met.

***(SAMPLE ONLY)***
**Current Seral Condition of Principal Ecosystem Units in the Make-Believe Range Unit**

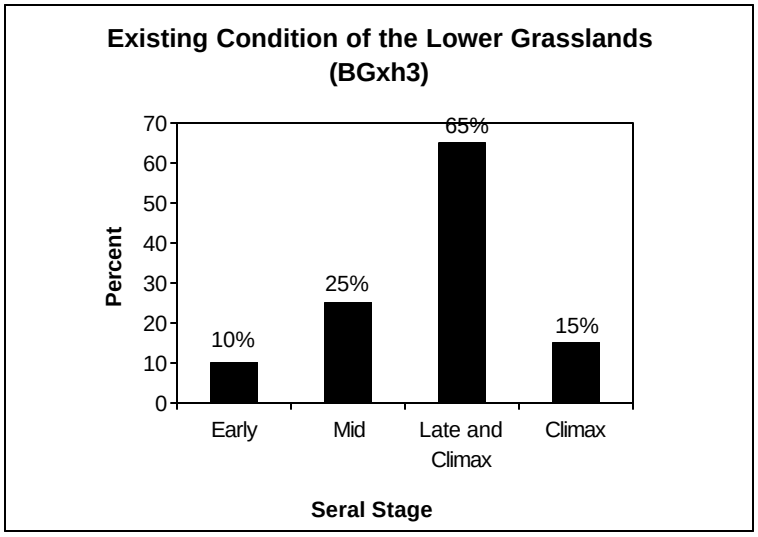
| Principal Ecosystem Unit | Seral Stage Representation | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | <1 | - | 5 | =2 |
| Lower Grasslands | | | | |
| Talus | 0 | 0 | 5 | 5 |
| Gentle slopes and terraces – sage dominated | **3** | 3 | **2** | **0** |
| Moist depressions and swales | **2** | 4 | **0** | **0** |
| Steep cool slopes | **2** | 4 | **1** | **0** |
| Steep warm slopes | 0 | 1 | 5 | 4 |

After all Range Units were assessed, the individuals who completed the assessments met as a group to compile and share information from each Range Unit. Based on this compilation, the assessment team then determined an overall seral stage assessment for each Principal Ecosystem Unit for each *biogeoclimatic subzone*. This information was then used to produce a summary table in the same format as above for each of the Upper, Middle and Lower Grasslands.

Since exact area in hectares and exact percentages of each Principal Ecosystem Unit were not available, this process was very approximate. However, for Principal Ecosystem Units with relatively uniform seral stages (i.e. Talus, Steep warm slopes and Steep cool slopes), it was very straightforward to determine overall seral stage distributions.

## Current Condition of the Lower Grasslands

The current condition of the Lower Grasslands is estimated to be predominantly late seral stage. An estimated 65% is in combined late and climax, 15% in climax seral stage, 10% in early seral stage and mid seral estimated at 25% (see graph below).[23] It should be noted that considerable portions of the early and mid seral condition areas are caused by sheep and deer grazing, not domestic livestock.




Late seral condition areas occur predominantly on the steep grassy and eroded slopes that occupy a large part of the Lower Grassland landscape. Most of the early and mid seral areas occur on gentle and moderate sage and grass dominated slopes. The following specific areas are currently in early or mid seral stages:

- the majority of the lower terraces along the Fraser River (including McGhee Flats);
- the level and gently sloping sagebrush areas of the Coal Pit Pasture;
- the level and gently sloping sagebrush areas south of the Home Field and between Grinder and Higgenbottom Creeks; and,
- portions of the level and gently sloping, easily accessed areas in the northern portion of the Fraser North Range Unit.

The gentle slopes above the Fraser River are in early and mid seral stages almost exclusively as a result of the very heavy use by California Bighorn Sheep.

[23] Note that these figures do not add to 100%. The reason is that late and climax seral conditions are considered *together* for assessment purposes. For example, in this case, late and climax together comprise 65% of the lower grasslands, with 15% being in climax seral condition. This means that 50% would, by default, be in late seral stage. 10% early, 25% mid and 65% late and climax = 100%

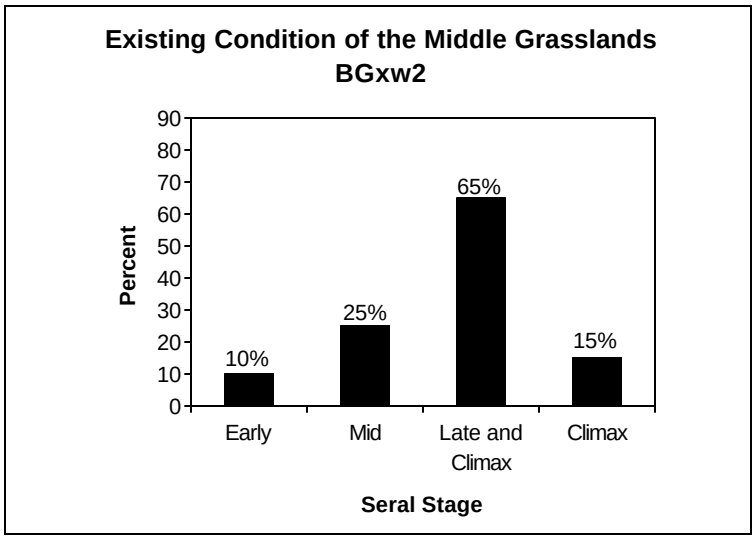
**Current Seral Condition of Principal Ecosystem Units in the Lower Grasslands (BGxh)**

| Principal Ecosystem Unit | Seral Stage Representation | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Lower Grasslands | | | | |
| Talus | 1 | 1 | 5 | 5 |
| Gentle slopes and terraces – sage | **2** | 3 | **2** | **1** |
| Gentle slopes and terraces – grass | **2** | 3 | **2** | **1** |
| Moist depressions and swales | **4** | 0 | **2** | **1** |
| Steep slopes – sparsely vegetated | 1 | 1 | 5 | 4 |
| Steep cool slopes | 0 | 2 | 5 | 2 |
| Moderate to steep slopes –sage | 1 | 4 | **2** | **1** |
| Lakeshore riparian and wetlands | **2** | 4 | **1** | **0** |
| Streamside riparian | 1 | 2 | **4** | **1** |

The Lower Grasslands have fewer riparian areas than other biogeoclimatic units in Churn Creek. As a result, lakeshore and wetland riparian areas have received significant use by both wildlife and cattle and have generally been heavily impacted. However, streamside riparian areas with limited water supply are mostly late seral.

### Current Condition of the Middle Grasslands

Current condition of the Middle Grasslands is estimated to be predominantly late seral stage with significant areas in mid seral stage. Combined late and climax seral stages are estimated to cover 65% of the Middle Grasslands, with approximately 15% in climax stages. Early seral condition is estimated to be 10% with about 25% in mid seral stage (see graph below).




The Middle Grasslands encompass all the mid elevation slopes of the Fraser River valley as well as Churn Flats, Gooseberry Flats, Dry Lake and the cattle handling facilities and hayfields of the

Empire Valley Ranch. Impacts from California bighorn sheep and mule deer are much less significant here that in the Lower Grasslands.

**Current Seral Condition of Principal Ecosystem Units in the Middle Grasslands (BGxw)**

| Principal Ecosystem Unit | Seral Stage Representation | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Middle Grasslands | | | | |
| Talus | 1 | 1 | 5 | 5 |
| Gentle slopes and terraces | 1 | 2 | **3** | **1** |
| Aspen copses | 1 | 2 | **3** | **1** |
| Moist depressions and swales | **2** | 3 | **2** | 2 |
| Steep warm slopes | 1 | 1 | 5 | 3 |
| Steep cool slopes | 1 | 2 | 5 | 3 |
| Lakeshore riparian and wetlands | **3** | 3 | **1** | **1** |
| Streamside riparian | 1 | 2 | **4** | **1** |

The majority of late seral grasslands are concentrated in the following areas:

- Churn Flats;
- Sheep Point;
- eastern portions of Airport Flats;
- steep slopes;
- Gooseberry Range Unit; and,
- Table Mountain.

Most early and mid seral stage grasslands are located:

- south of the ranch headquarters;
- at Eagle Tree;
- in the western portions of Airport Flats;
- at Wycott Flats; and,
- in significant portions of Murdock and Hartmann pastures.

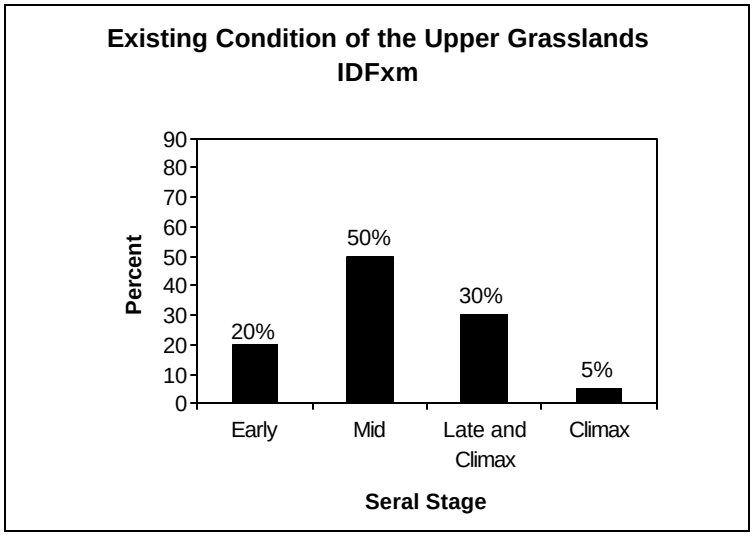
The Middle Grasslands have extensive road access throughout. Weeds are also more common here than in the Lower Grasslands, with hounds-tongue on moist sites, burdock on wet sites, cockleburr in some marshes, and local infestations of both knapweed and leafy spurge.

The Middle Grasslands have a diversity of riparian areas, including kettle lakes, the artificial wetlands and lakes of the Koster and Grinder systems, a number of natural stream systems and

numerous gullies with ephemeral streams. Many of these riparian areas are in early seral condition.

**Current Condition of the Upper Grasslands**

The Upper Grasslands throughout the Protected are estimated to be predominantly in mid seral condition. Mid seral is estimated at 50%, with early seral at 20% and 30% estimated to be in combined late and climax seral condition. Climax comprises approximately 5% of the Upper Grasslands.




A number of areas in the Upper Grasslands (Alkali Flats, Maytag Pasture, BC Pasture, Lease Pasture and Holding Pasture) were the private, fenced pastures of the Empire Valley Ranch. These "Specialty Pastures" were used for branding, breeding, de-burring, livestock handling and isolating cattle. Because of this focused use, these pastures have some of the largest concentration of early seral stage grasslands in the Protected Area.

**Current Seral Condition of Principal Ecosystem Units in the Upper Grasslands (IDFxm)**

| Principal Ecosystem Unit | Seral Stage Representation | | | |
|---|---|---|---|---|
| | Early | Mid | Late+Climax | Climax |
| Target | =1 | - | 5 | =2 |
| Upper Grasslands | | | | |
| Talus | 1 | 1 | 5 | **1** |
| Gentle slopes and terraces | **2** | 3 | **2** | **1** |
| Lakeshore riparian | **2** | 3 | **2** | **1** |
| Moist depressions and swales | **2** | 4 | **2** | 0 |
| Steep warm slopes | 1 | 2 | **4** | 2 |
| Steep cool slopes | 1 | 2 | 5 | 4 |

| | | | | |
|---|---|---|---|---|
| Aspen copses | **2** | 3 | **2** | **1** |

Most wetland and streamside riparian areas in the Upper Grasslands are in early to mid seral condition. Examples include Goose Lakes and Blackwater Lakes, Grouse Lake and Hog Lake.

Late seral grasslands can be found:

- on the steeper slopes within the Fraser South Range Unit;
- portions of the level and gently sloping grasslands on Clyde Mountain; and,
- on the moderate and steep slopes of Gooseberry and Churn Creek Range Units.

The Upper Grasslands also have a significant component of grassland/forest interface. Partially as the result of fire suppression and partially as a result of diminished fuel loading caused by continuous grazing, fire has been virtually eliminated from the natural functioning ecosystem in the grasslands. The effect is that Douglas-fir seedlings, which historically would have been killed by fire, have been "encroaching" onto the upper grasslands for many years.

Encroachment is discussed in more detail in *Section 4.4. Vegetation and Forest Health,* and a map of recent encroachment in the Protected Area can be found in *Appendix B – Encroachment*

# Appendix L : Churn Creek Protected Area Order in Council

**PROVINCE OF BRITISH COLUMBIA**

**ORDER OF THE LIEUTENANT GOVERNOR IN COUNCIL**

*Order in Council Number* 0151 , *Approved and Ordered* FEB 11 1998

*Lieutenant Governor*

**Executive Council Chambers, Victoria**

On the recommendation of the undersigned, the Lieutenant Governor, by and with the advice and consent of the Executive Council, orders that, on the recommendation of the Environment and Land Use Committee,

(a) Order in Council 177/96 is rescinded, and

(b) the attached Churn Creek Protected Area Order is made.

*Minister of Environment, Lands and Parks*

*Presiding Member of the Executive Council*

*(This part is for administrative purposes only and is not part of the Order)*

**Authority under which Order is made:**

Act and section: *Environment and Land Use Act*, RSBC 1996, c.117, section 7 (1)

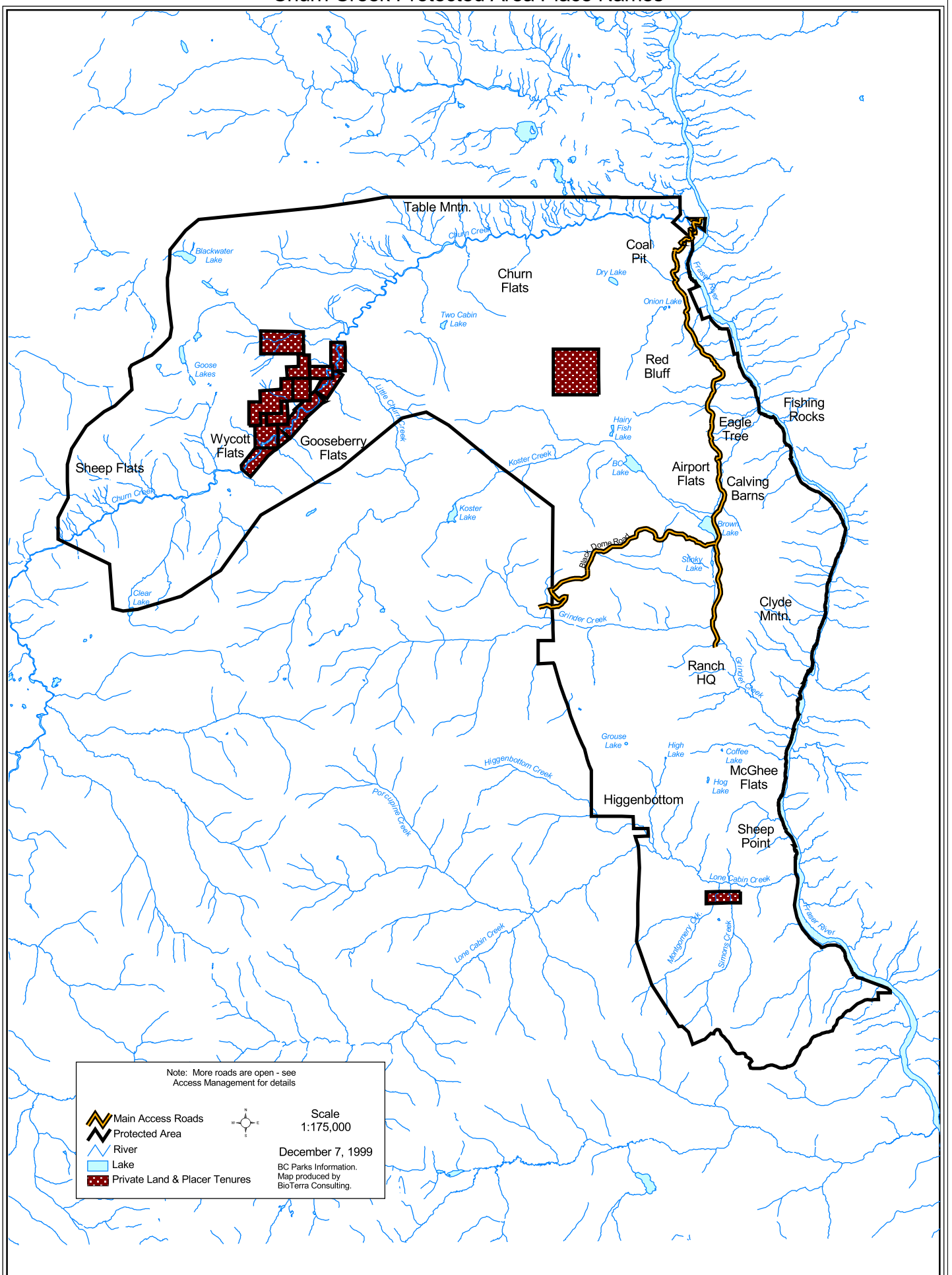
Other (specify): *Park Act*, RSBC 1996, c. 344, section 6; o.c. 177/96

January 15, 1998

59 /98/37/mgm

# Appendix M : Map Folio

# Map One
# Churn Creek Protected Area Place Names



# Map Two
## Regional Context of the Churn Creek Protected Area


Stum Lake
Horsefly
Williams Lake
Alexis Creek
Canyon
Doc English Bluff
School House Lake
Lac La Hache
Forest Grove
Junction Sheep Range
Taseko
Moose Valley
100 Mile House
Flat Lake
Churn Creek
Big Creek/ South Chilcotin
Big Bar Lake
Marble Range
Chasm
Ts'yl-os
Clinton
Edge

Cariboo Distict Parks

Scale
1:1,000,000

December 7, 1999

BC Parks Information.
Map produced by
BioTerra Consulting.

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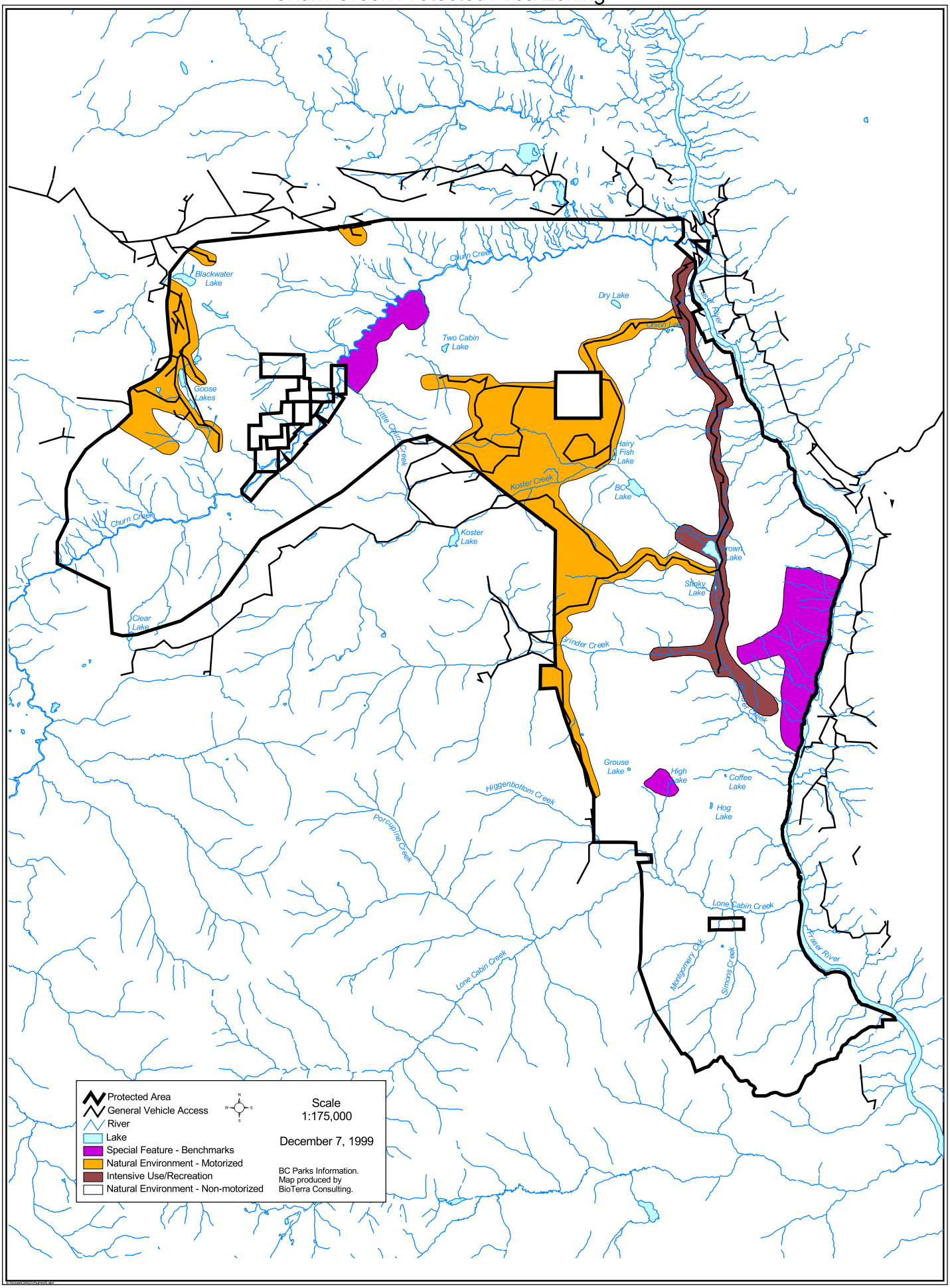
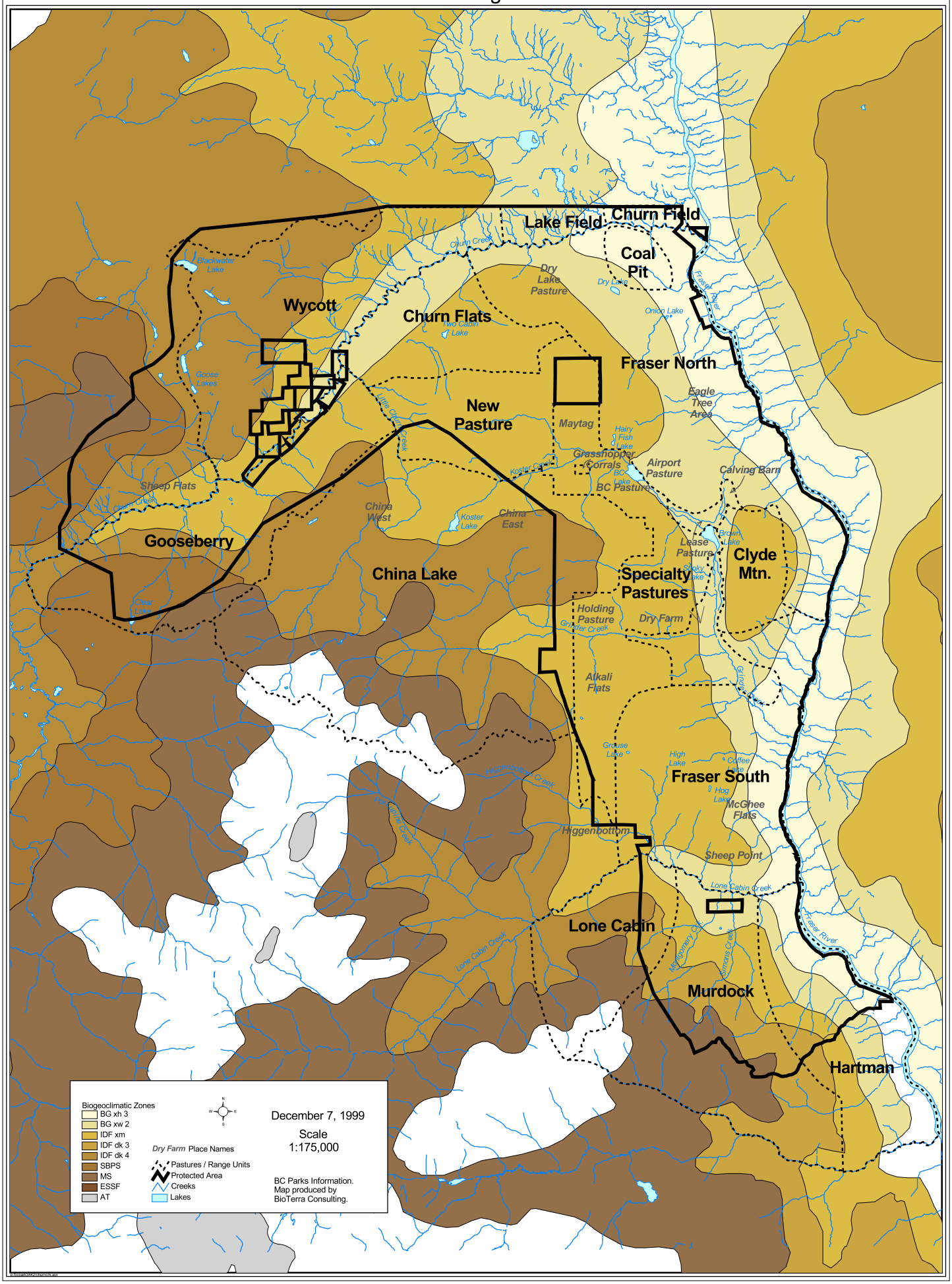
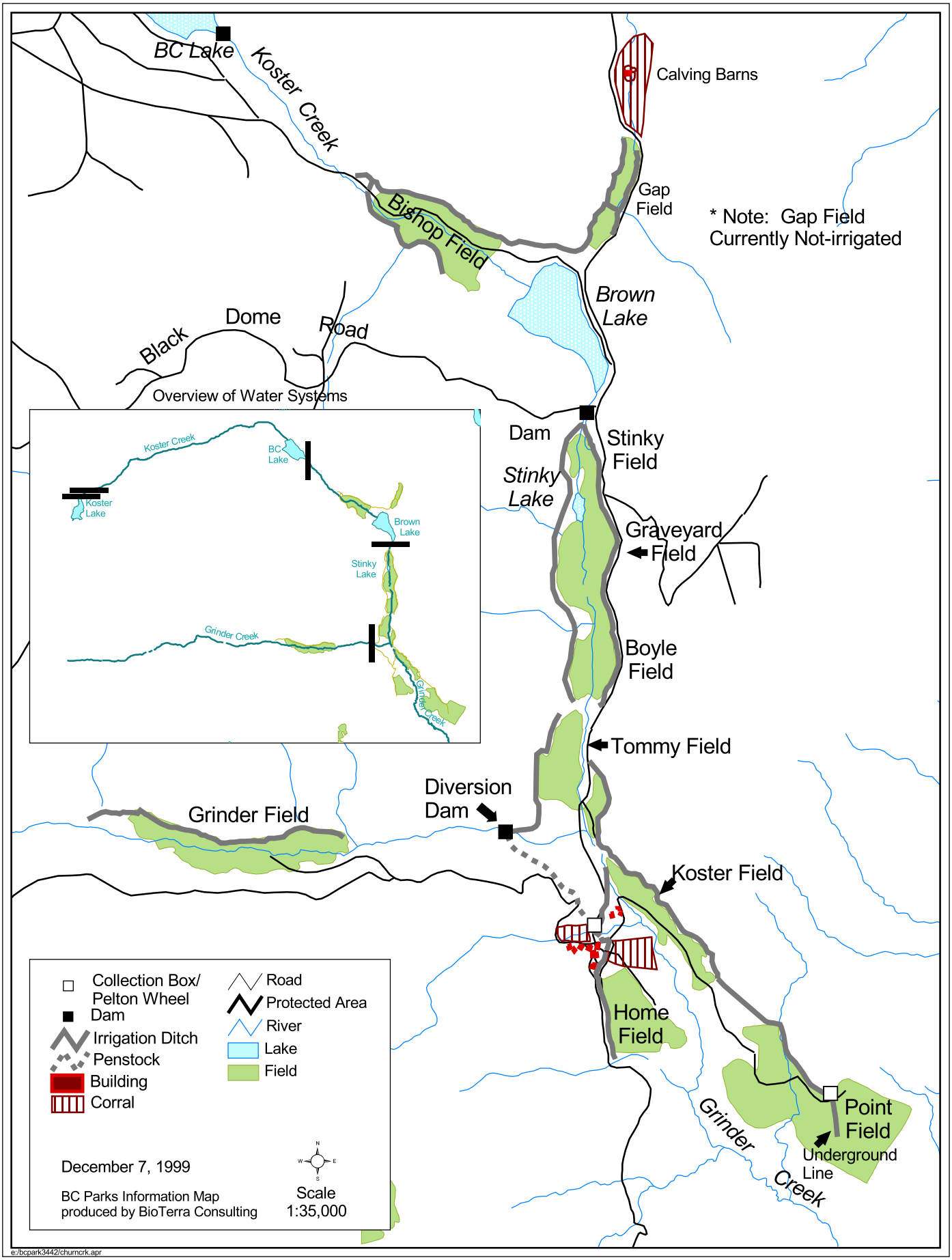
# Map Three
# Churn Creek Protected Area Zoning



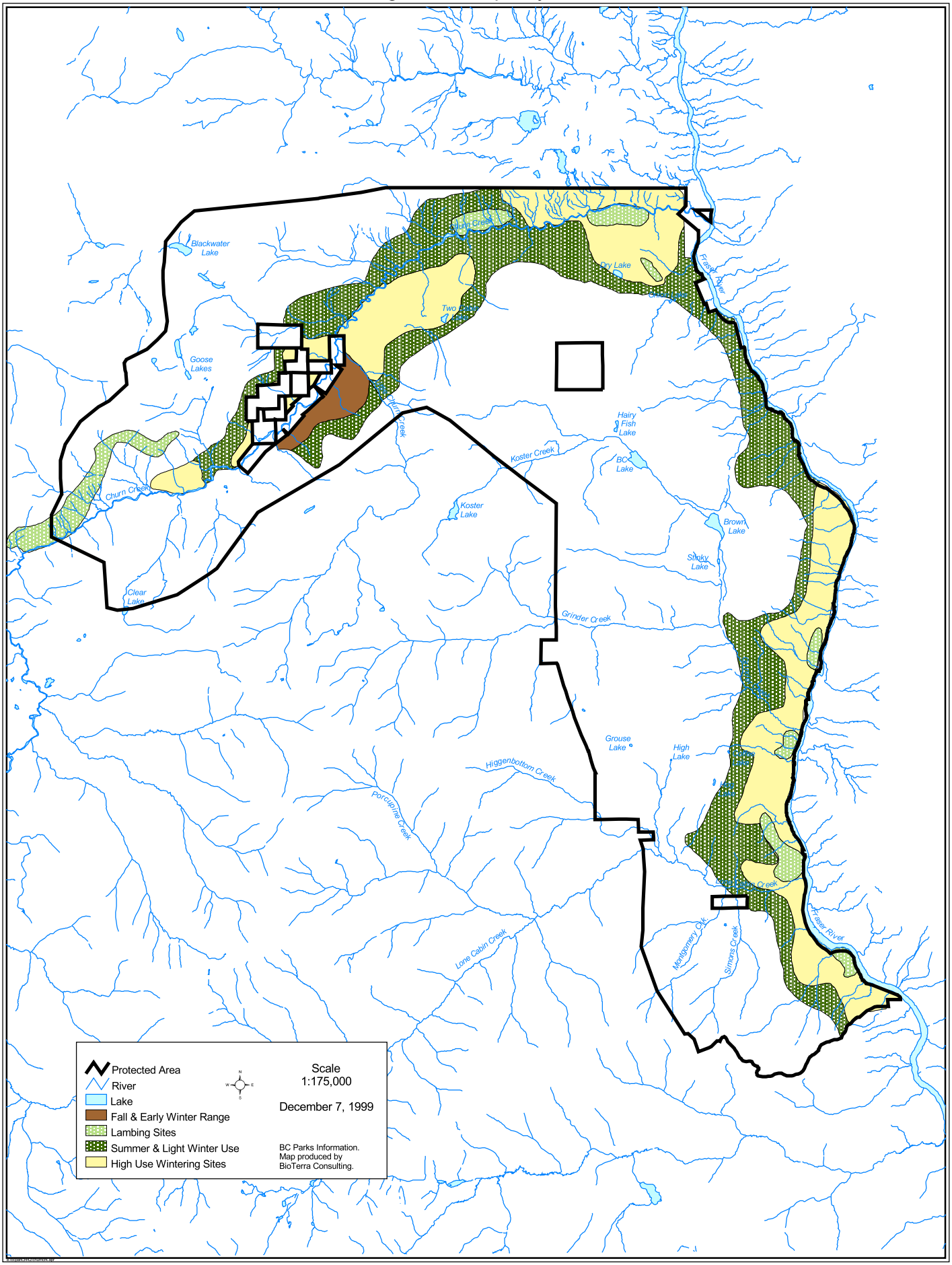
# Map Four
## Churn Creek Protected Area Biogeoclimatic Zones & Pastures



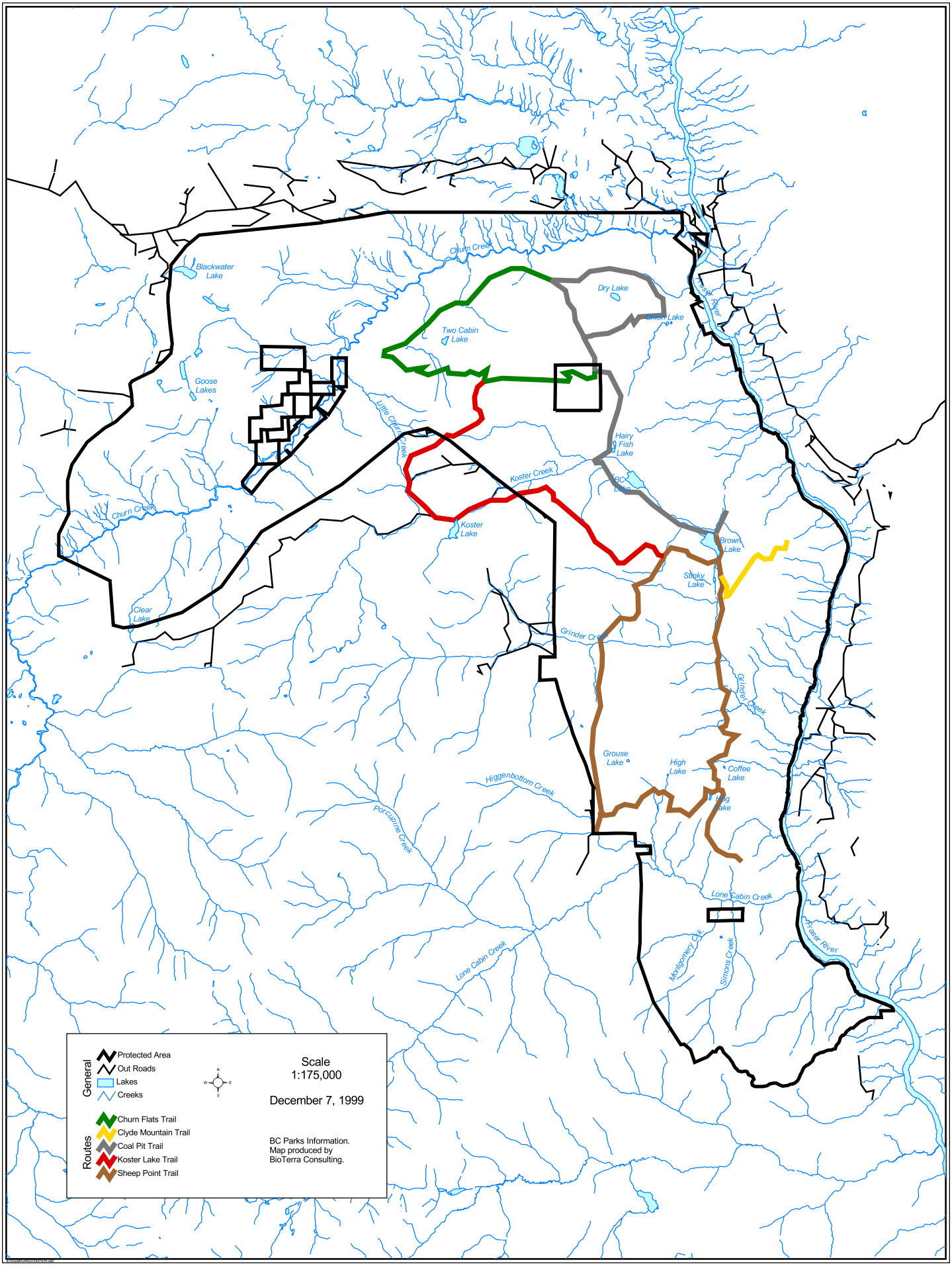
# Map Five
# Ranch Infrastructure and Water Systems



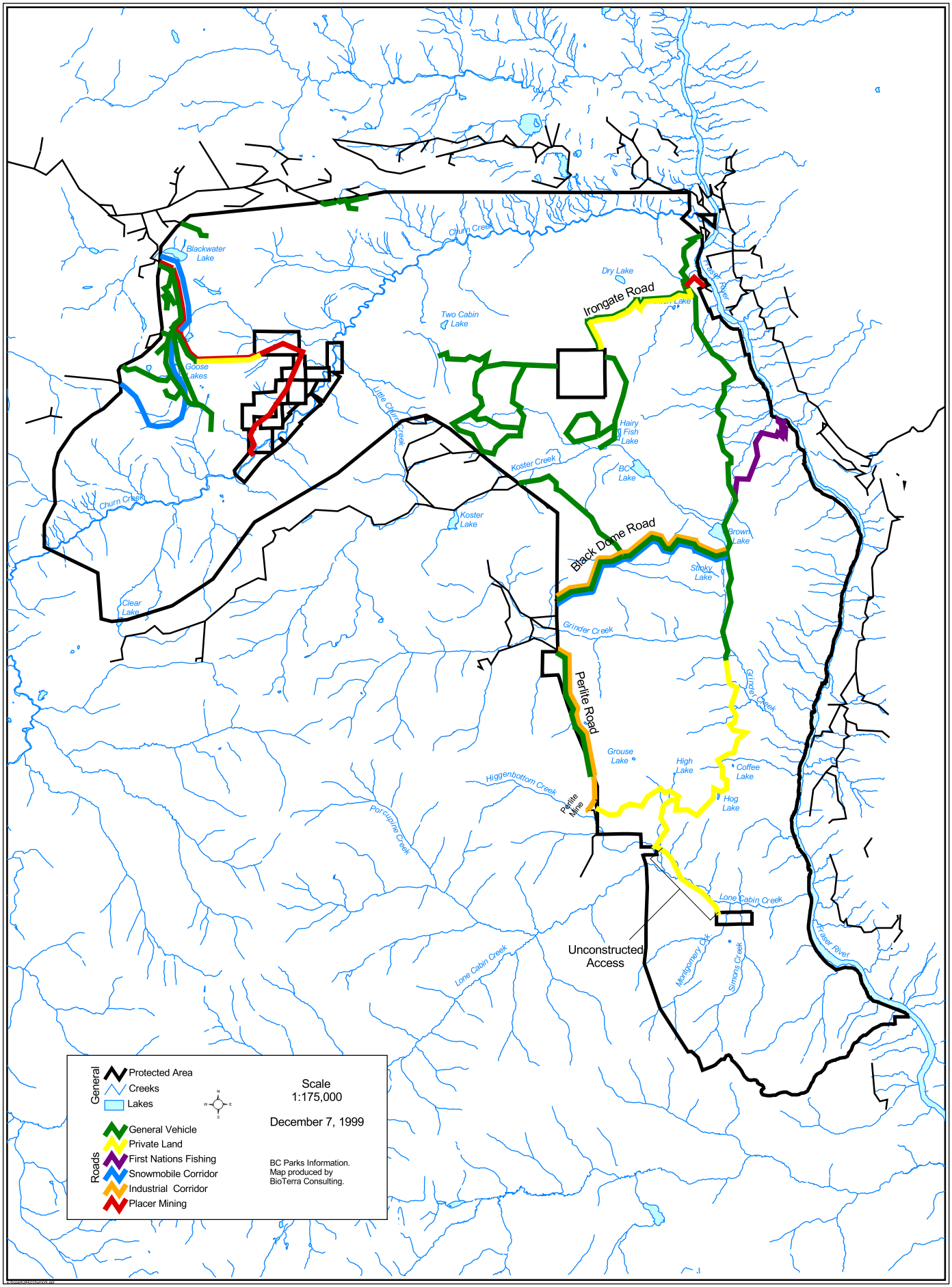
# Map Six
# Churn Creek Protected Area
# California Bighorn Sheep Key Habitats



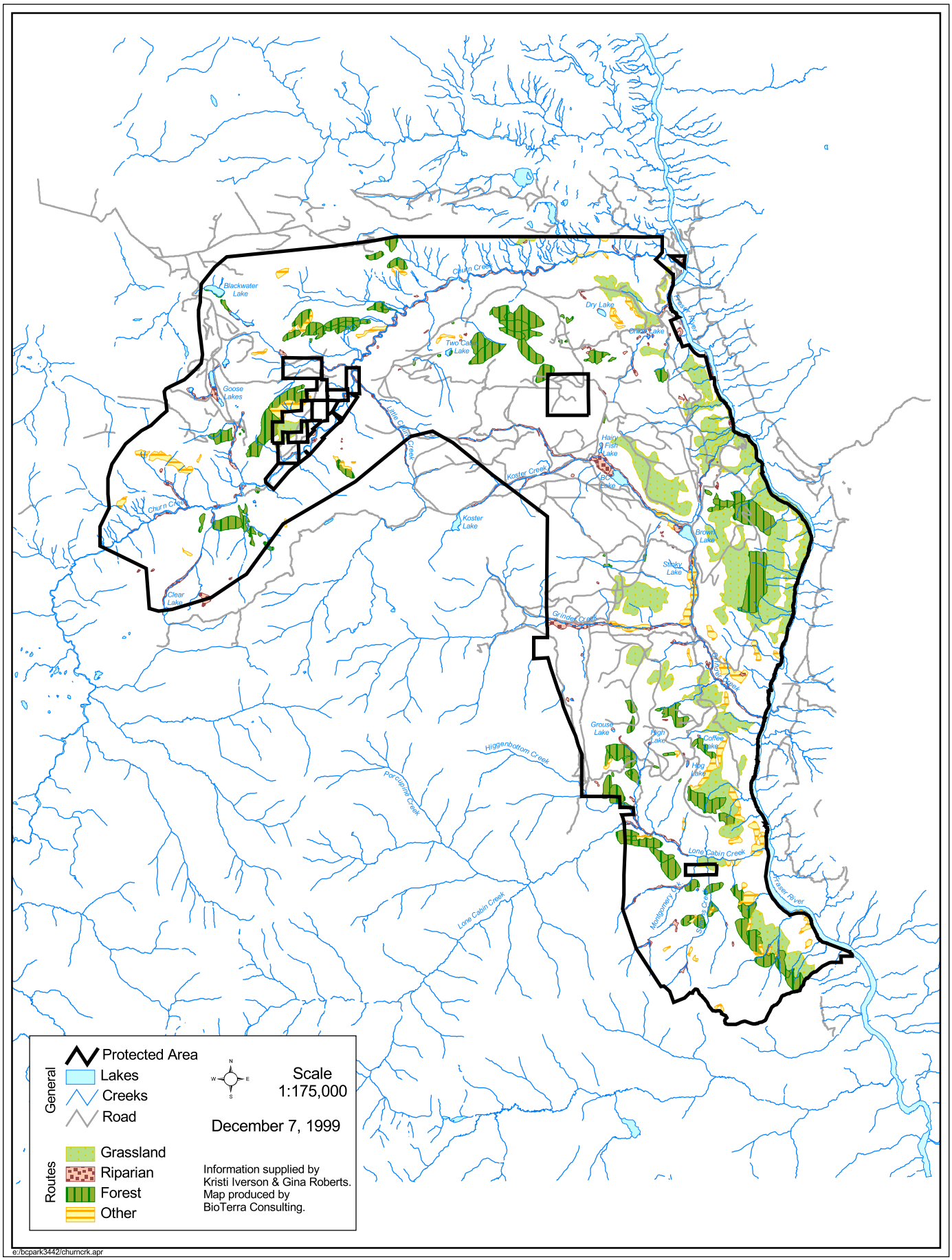
# Map Seven
# Churn Creek Protected Area Non-motorized Routes
# (Walking, Horses, Bicycles)



# Map Eight
# Churn Creek Protected Area Final Draft Access Plan



# Map Nine
# Critical Habitats

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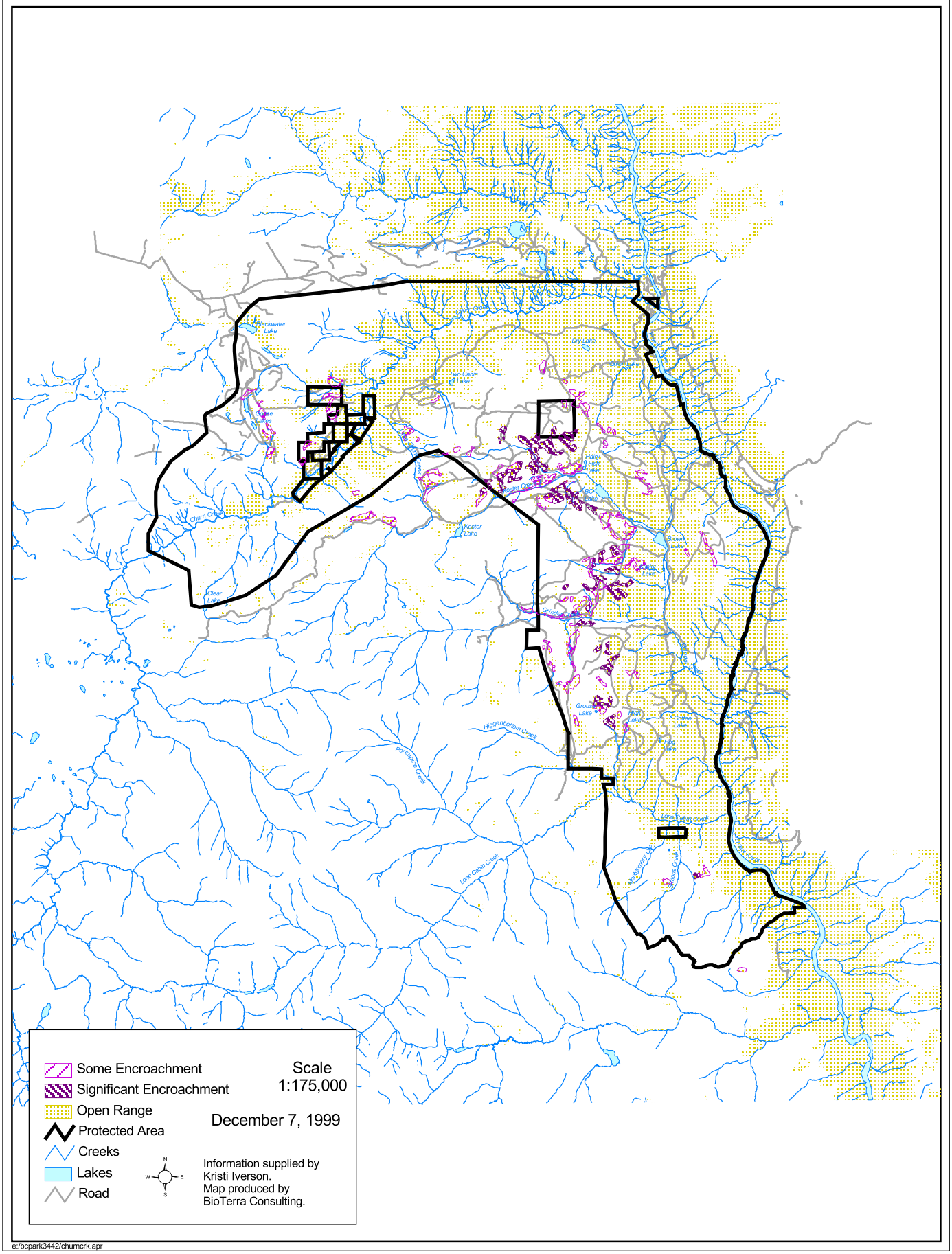
# Map Ten
# Churn Creek Protected Area Encroachment

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